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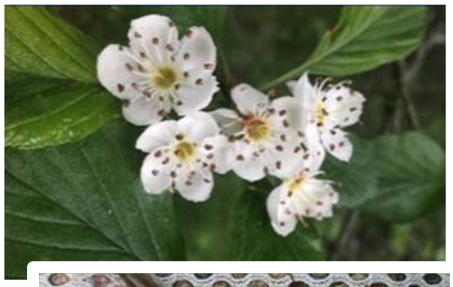
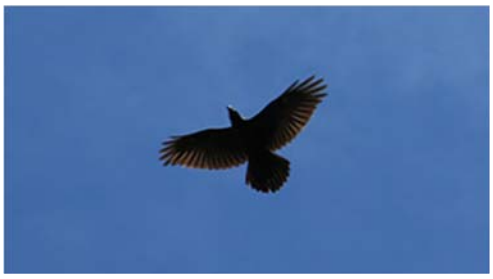










Lindsay OPS Waste Disposal Site

51 Wilson Road

City of Kawartha Lakes

Prepared for City of Kawartha Lakes

AEC Project No. 25-010 | April 2025

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Environmental Assessments & Approvals

April 28, 2025 AEC 25-010

City of Kawartha Lakes
Waste Management Department
322 Kent St. West
Lindsay, ON
K9V 4T7

Attention: Ms. Kayla Pantaleo -Regulatory Compliance Officer

Re: 2024 Annual Monitoring Report – Lindsay OPS Waste Disposal Site

Dear Kayla:

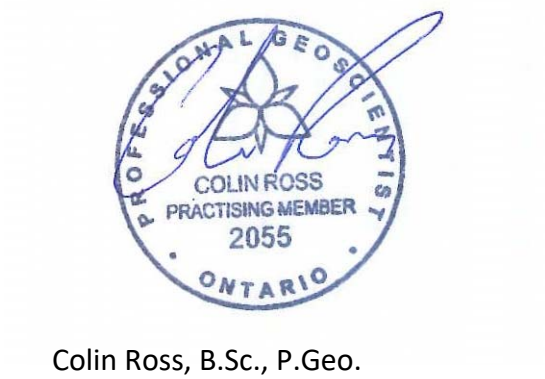
Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to provide the 2024 Annual Monitoring Report (AMR) for the Lindsay Ops Waste Disposal Site (Site). The data and interpretation included provides a summary of the 2024 monitoring data with comparison to the historical data and accurate assessment of the current state of the landfill site. This report has been prepared in compliance with the existing Environmental Compliance Approval (ECA) and applicable Provincial standards. This assessment also interprets the longer term trends at the Site such that an appropriate monitoring program assesses the current state of the landfill.

The environmental setting at the Lindsay Ops Landfill Site is well understood based on over 40 years of performance monitoring. The data trends over this monitoring period have yielded a relatively consistent geochemical signature such that it is reasonable to infer that the Site reflects a steady state condition without any noted off site contamination concerns. This is supported by the general consistency between the 2024 data with the historical data set for the majority of monitoring locations.

If there are any questions regarding the content of the report, do not hesitate to contact the undersigned.

Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.



Colin Ross, B.Sc., P.Geo.
Senior Hydrogeologist

c.c. MECP – Peterborough District Office

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EXECUTIVE SUMMARY

The City of Kawartha Lakes (City) is responsible for the operation and maintenance of the Lindsay OPS Landfill Site (Site) in accordance with the Environmental Compliance Approval (ECA) (No. A321504) issued by the Ministry of the Environment, Conservation & Parks (MECP) on originally issued December 14, 2001 and last amended in June, 2022.

The Site is located in proximity to the eastern shoreline of the Scugog River along with the Lindsay Water Pollution Control Plant (WPCP), which is utilized by the Site to manage leachate collected by the leachate collection system.

The soils underlying the Site are mainly comprised of a dense, silty sand to sandy silt glacial till approximately 6-9 m thick, overlying limestone bedrock. Ground water movement at the Site is interpreted to be downward through the overburden sequence to the underlying limestone bedrock with the overburden materials having limited permeability relative to the underlying fractured bedrock. This relative difference limits the migration of leachate into the underlying aquifer, and thus the horizontal extent of leachate influence at the Site. The limited lateral extent of leachate impacts is confirmed with the historical monitoring at the Site, which continues to show leachate impacts only a short distance from the waste areas. The lack of measurable leachate impacts beyond the waste area also confirms the leachate containment and collection system is effectively mitigating leachate impacts at the Site.

The data trends over this monitoring period have yielded a relatively consistent geochemical signature, although some subtle long-term trends are present at select locations owing to the fact that the Site is still active and is also influenced by the adjacent WPCP and lagoons which has created a measurable influence in the adjacent ground and surface water at the Site. Despite this influence, regular maintenance of the lagoons (*i.e.,* cleanouts) has proven to mitigate these impacts, which are also noted to be localized to the lagoon areas such that not off-site impacts are occurring.

The 2024 monitoring completed indicate that no trigger mechanism exceedances were noted and the Site met all compliance criteria with respect to the ECA with the exception of the average daily flow volume of leachate pumped to the WPCP exceeded the maximum allowable average daily flow of 300 m^3/day specified in the ECA during February and April. However, these exceedances were likely more related to increased inputs resulting from snow melt events. This will continue to be monitored.

Revisions to the monitoring program are included as part of this assessment which will require amendment to the ECA if supported by the MECP. These changes include:

- Removal of PCB and VOC monitoring in ground water, or at a minimum largely reduce the program to targeted locations immediately downgradient of the waste area to a frequency of every five years due to a historical lack of detections;
- Removal of PCB, radionuclide, pesticides and VOCs (or at least reduction in frequency) from leachate sampling program;
- Removal of PCB and VOC monitoring from the surface water at all locations due to a historical lack of detections;
- Reduce ground water monitoring frequency to semi-annual monitoring given the relatively consistency in the data over time. This includes reduction of ground water level monitoring to semi-annual as well from quarterly;
- Curtail landfill gas monitoring to locations within or immediately surrounding the waste mound given a historical lack of detections from the remaining monitoring network;
- Remove the Wetland Assessment requirement which is currently completed every five years and has included recommendations for removal of the program; and
- Reduce the frequency of the leachate collection system flushing and inspections to every three years due to the integrity of the system being shown to be consistent over time.

1.0 INTRODUCTION

The City of Kawartha Lakes (the "City") Lindsay-Ops Landfill Site (the "Site") operates under Certificate of Approval (CoA) No.: A321504 originally issued December 14, 2001. Following the issuance of the original CoA, the Ministry of the Environment, Conservation and Parks (MECP) issued several amendments, the most recent approval being the Amended Environmental Compliance Approval (ECA) Number A321504, issued in June, 2022 (Appendix A).

The purpose of this report is to comply with the requirements of Condition No. 15.1 of the ECA which requires the submission of an Annual Status Report.

1.1 Background

The Lindsay-Ops Landfill Site (the "Site" or the "landfill") is located on Part of Lots 25, 26, and 27, Concession 6, in the former Township of Ops, now in the City of Kawartha Lakes. The Site is approximately 500 m east of the Scugog River and 2.5 km north of Lindsay (Figure 1A). Landfill operations began at this location in 1980. On December 14, 2001, the MECP approved the City's application for the continued use and north expansion of the Lindsay-Ops Landfill.

The service area of the Site is the City of Kawartha Lakes. The Site is licensed to accept solid non-hazardous municipal waste (as defined in O.Reg. 347/90 [as amended]) including wastes generated by residential and industrial, commercial and institutional (IC&I) sectors, contaminated excess soils, and biosolids (processed organic waste) restricted to treated and dewatered sewage sludge from the Lindsay Water Pollution Control Plant (WPCP).

1.1.1 Surrounding Land Use

The Lindsay WPCP is located immediately west of the original landfill and southwest of the expansion area. The Sturgeon Lake Wetland and the Scugog River are west of the Lindsay WPCP and Landfill Site. The City owns the land to the north of the Site. Immediately south of the Site is Lagoon Road, with the adjacent land south of the road owned by the City as a Contaminant Attenuation Zone (CAZ). Immediately east of the Site is Wilson Road. The City owns all of the properties to the east side of Wilson Road with the exception of one at the northeast corner of Wilson Road and Highway 36.

As shown in Figure 1B, the Site and the lands east to Wilson Road and north to Lot 27 (area of north expansion), are zoned Industrial Disposal (MD-1). Land to the west is zoned Industrial Disposal (MD-2). The MD-2 zone establishes that the land can only be used for a sewage treatment facility. The remaining lands in Lot 27 are zoned Disposal Industrial Exception Three (MD-3). The MD-3 zone establishes that the land may only be used for a waste transfer station,

a waste processing facility or uses accessory to a landfill operation within the MD-1 zone. Lands on Lot 25, directly south of the existing Site, are zoned industrial with a temporary holding zone applied (M(H)). The holding zone dictates that the land shall be used for existing uses, in this case agricultural, and can be used for industrial purposes only after amending the Zoning By-law to remove the holding category. Finally, it is noted that all current land uses in and around the Site appear to be allowable within their respective zoning restrictions.

2.0 ENVIRONMENTAL MONITORING

The 2024 monitoring program for the Site was undertaken by Azimuth Environmental Consulting (Azimuth) and City staff. Azimuth completed the majority of the monitoring tasks, while City staff were involved with more routine items such winter gas monitoring and monthly leachate samples. The details of the monitoring programs are outlined in the sections below.

Prior to sampling at ground water monitors, static water levels were measured. Ground water samples were then collected following purging of at least three well volumes of water from each monitor using dedicated check valve pumps and tubing or until the monitor was dry and sufficient recovery allowed for a sample collection. Ground water samples for inorganic analysis were also field-filtered for metals and dissolved organic carbon (DOC) using disposable 0.45 μm filters.

Surface water samples were collected at a depth about equal to half of the surface water features total depth, while minimizing the potential for sediment entrainment and were not filtered. It is noted that surface water features at this Site are seasonal, with most locations being dry or very limited water depth during the summer and fall monitoring events.

In 2024, the analytical testing was completed by Caduceon Environmental Laboratories (Caduceon) of Kingston or Richmond Hill, Ontario. Caduceon is accredited by the Canadian Association for Environmental Analytical Laboratories. A more detailed description of the field protocols employed for all monitoring activities associated with the 2024 monitoring program, have been included in Appendix B.

2.1 Ground Water

2.1.1 Regional Characteristics

Previous studies conducted for the Site have described the regional hydrogeological setting of the area in detail. These studies form the basis of the understanding of the environmental setting and utilized to develop the site conceptual model:

- Interim Landfill Expansion Study (Hydroterra Limited, 1991);

- Supplementary Report (Hydroterra Limited, 1993);
- Landfill Assessment and Wetland Impact Study (Golder Associates Ltd., 1996); and
- Hydrogeological Conditions and Assessment of Ammonia Loadings - Proposed Lindsay-Ops Landfill Expansion (Golder Associates Ltd., 2000).

The information in these reports is summarized below.

2.1.1.1 Regional Geology

The Site is located on the Peterborough Drumlin Field which comprises a broad glacial till plain forming a mantle over limestone bedrock. The glacial till is typically comprised of dense, silty sand to sandy silt, with some gravel and cobbles/ boulders. The till is mantled by glaciolacustrine clay, silt and sand deposits within the lower lying areas adjacent to the Scugog River. Water well records published by the MECP indicate that the overburden thickness ranges on a regional basis from approximately 5 m to 10 m. The underlying bedrock is grey, fine-grained to crystalline argillaceous limestone and claystone of the Lindsay Formation (Figure 3).

Regional topography slopes northwest from a topographic high of 287 m above mean sea level (masl) located about 1.4 km east of the Site, to an elevation of 250 masl in the vicinity of the Sturgeon Lake Wetland located adjacent to the Scugog River, approximately 0.5 km west of the Site. The Scugog River flows northerly over the till plain into Sturgeon Lake, located a few kilometres north of the Site.

2.1.1.2 Regional Hydrogeology

Water well records published by the MECP indicate that the majority of domestic water wells are drilled wells, completed within the upper few metres of the bedrock. The shallow bedrock aquifer is more permeable and contains less mineralized water than the deeper bedrock sequences. Mineralized and sulphurous water quality is documented on local well records between 9 and 18 m below ground surface (mbgs).

The occurrence and movement of ground water within the upper bedrock is controlled by the variable distribution and hydraulic connection of the fractures, fissures and laterally continuous bedding planes within the bedrock. On a regional scale, the reported static water levels of the existing wells indicate northwest horizontal ground water movement within the upper bedrock, discharging to the Scugog River. A northeast-trending regional ground water divide occurs about 1.4 km upgradient (east) of the Site at the topographic high. The region west of the ground water divide and east of the wetland (including the Site and WPCP lagoons) is

considered a recharge area for the regional ground water flow system. Recharge occurs via infiltration and vertical percolation of water through the overburden to the underlying bedrock aquifer. Further to the west, the ground water zone changes from recharge to discharge as the ground water discharges to the Scugog River.

Limited overburden-aquifer data is available. The till plain is not considered to be a significant water bearing zone. However, the reported static-level information suggests that the water table conforms to the surface topography and that an inferred lateral ground water movement within the till overburden is northwesterly toward the Scugog River, the ultimate discharge area for the upper bedrock aquifer around the Site. As noted above, the overburden is a vertically dominated flow system. The low permeability of these till soils restricts significant lateral flow such that this unit is considered an aquitard.

2.1.2 Site Characteristics

The following sections summarize the Site-specific stratigraphy and hydrogeological characteristics based on previous studies by Hydroterra Ltd. (1991, 1993) and Golder Associates Ltd. (1996, 2000). Borehole locations are identified on Figure 2A and borehole records are provided in Appendix C.

2.1.2.1 Site Stratigraphy

The overburden stratigraphy at the Site consists primarily of sandy silt to silty sand and gravel till, containing occasional sand and silt interbeds and many cobbles and boulders. The overburden thickness at the borehole locations ranges from 6 to 9 m.

Figures 3 and 4 show a stratigraphic cross-section through the old landfill area and the north expansion area (Cell 1), respectively. The average thickness of overburden underlying the old landfill area is estimated at approximately 8 m, while that for the north expansion area is approximately 2.5 m beneath Cell 1, 3.3 m beneath Cell 2, 5.0 m beneath Cells 3 & 6 and 5 m beneath the north half of Cells 4 and 5 (constructed in 2016/17). In other words, the overburden thickness increases to the south.

The old landfill area on the north side of Lagoon Road that was filled between 1980 and approximately 2004 and has no base liner system; but, has a synthetic membrane cap and perimeter leachate collection system. The north expansion area has a geomembrane / compacted clay composite base liner system and an overlying leachate collection system, as shown in Figure 2B.

In the southwest, west and northwest portions of the old landfill area, the till overburden contains a widely distributed, sand/silt lens ranging in thickness from about 1.0 to 4.5 m generally bottoming at about 4 to 6 mbgs. This lens (referred to as the granular interbed) is typically comprised of thinly bedded silty sand and silt layers.

The native overburden beneath the WPCP lagoons consists of silty sand to sandy silt till with some clay, ranging in thickness from approximately 2 to 5 m at the locations of the lagoon monitoring wells. The native overburden is overlain by excess soil materials (consisting of local sandy silt till) up to 7 m in thickness; which comprises the interior and exterior berms of the lagoons.

The limestone bedrock beneath the landfill area slopes westward at a relatively flat gradient of less than 0.005. Regionally, the bedrock is anticipated to slope southwest.

2.1.2.2 Site Hydrogeology

2.1.2.2.1 Ground Water / Leachate Levels and Flow Directions

The ground water and leachate level data for 2004 through 2024 (inclusive) are contained in Appendix D (Table D-1). Also presented in Appendix D (Figures A-1 to A-5) are the leachate levels measured at a total of five (5) vibrating wire piezometers installed on the surface of the geomembrane liner in Cell 1, Cell 2, and Cells 3 and 6 of the north expansion area (refer to Figure 2A for locations).

Schedule B of amended ECA for the Site dated June, 2022, requires that ground water level monitoring occur at all monitoring wells four times annually. During 2024, ground water level monitoring occurred in February, May, July and October at all wells within both the old landfill area and the north expansion area.

The shallow overburden and upper bedrock aquifer piezometric surface for October 2024 are presented in Figures 5 and 6, respectively. The expectation is that there is little lateral ground water movement within the shallow overburden owing to the limited hydraulic conductivity of the glacial till; but the figure reflects the topographic relief towards the Scugog River. The inferred horizontal hydraulic gradients within the shallow overburden generally range from approximately 0.005 to 0.05; but the dominant hydraulic gradient in the overburden is vertically down. Ground water movement within the upper bedrock aquifer (Figure 6) is in a west to northwesterly direction from the landfill, towards the eventual discharge into the Scugog River. Horizontal hydraulic gradients within the upper bedrock generally range from approximately 0.005 to 0.05 toward the Scugog River.

Beneath the old landfill area and the immediately surrounding lands, vertical ground water movement is interpreted to be downward through the overburden sequence to the underlying limestone bedrock. Comparison of the piezometric surface contours for the bedrock aquifer (Figure 6) with the inferred leachate surface within the old landfill footprint (Figure 5), indicates a downward hydraulic gradient of up to approximately 1.0 (using an average overburden thickness of 7.5 m beneath the old landfill footprint).

In 2006, the City initiated placement of a geomembrane final cover system over the old waste fill area. The purpose of the geomembrane cover system is to minimize leachate generation by limiting moisture infiltration into the landfill. This in turn limits leachate exfiltration from the unlined base of the landfill and allows natural processes (*e.g.,* adsorption, bio-chemical decay and dispersion) to effectively attenuate the existing ground water impacts as well as any future releases of contaminants (predominantly by diffusion) from the landfill base. Placement of the geomembrane cover system was completed in October 2007.

As indicated in Section 3.4, there has been variability over time in annual pumping volumes from Leachate Pumping Station No.: 1 (*i.e.*, the perimeter leachate collector system pumping chamber at the old landfill) over time; however, since 2007 when the geomembrane was installed there has been an overall decrease in volumes indicating the geomembrane has helped to reduce leachate generation at the Site.

The height of the leachate mound relative to the base of the old landfill in 2024 ranged between 1.7 and 5.6 m at 7-90/7-90-II (base of waste at 257.5 masl) whereas at 6-90-II (base of waste at 256.3 masl) there was no significant leachate mound. The higher leachate mound height at 7-90/7-90-II reflects its location at the outer (northern) limit of the geomembrane cover system and hence a higher infiltration rate in the area of this well, or a localized area where leachate is perched above relatively low permeability waste/ cover materials. Occasional spikes in leachate water levels have been obtained at the leachate wells (*e.g.,* relatively high leachate levels at 7-90-II in July 2017 and February 2018, [refer to Table A-1]). Golder (2019) suggested that the spikes may reflect gas pressure build-up around the well screen, which lifts the leachate column upward within the well, or may reflect temporary perched water conditions within the waste fill. However, and despite the lower leachate generation volumes, the water levels in the landfill have generally remained within a consistent range for the period of record.

The vibrating wire piezometer VWP02-1 is installed on the surface of the geomembrane liner in Cell 1 of the north expansion area, VWP04-1 is installed in Cell 2 and VWP12-1 and 12-2 are installed in Cells 3 and 6 (refer to Figure 2A for location and Appendix D, Figures A-1 to A-5 for

measured leachate levels). The piezometers indicated negligible leachate heads (<0.01 m) during 2024. VWP04-1 has not been located since 2019 when the cable got buried and could not be located; however historically had leachate levels at or below the liner level. VWP04-2 has not been operational since mid-2012; but gave leachate levels typically less than 0.1 m from the time of installation in 2004 through to 2012. These low leachate heads reflect rapid drainage of leachate above the geomembrane liner via the granular leachate collection system indicating the leachate collection system is working as designed.

As shown on the Cell 1 cross-section in Figure 4, the piezometric level in the upper bedrock aquifer beneath Cell 1 is higher than the leachate level within the cell by approximately 1.0 to 1.8 m. This infers an inward hydraulic gradient (*i.e.,* a hydraulic trap condition). This condition is beneficial with respect to restricting outward migration of leachate through any undetected defects that may potentially exist in the composite liner system. However, the bedrock condition is separated from Cell 1 by the overburden till which needs to be evaluated in order to assess the effectiveness of the hydraulic trap. For outward leachate migration to occur from Cell 1, the leachate level within Cell 1 must be above the overburden water table level. Historically, monitored water levels in the overburden have remained relatively constant and reflected the topographic gradient. In general water table elevations as reflected in Figure 5 have existed at about 254 masl on the down gradient side of Cell 1 which also is above the base membrane elevation as depicted in Figure 4 or inferring an inward hydraulic gradient.

Ground water level monitoring over the past 20 years at various locations has illustrated a consistent environment. Annually, water levels will fluctuate one to two metres; but the longer-term trend remains flat. This suggests a steady state condition is prevalent across the Site in both the overburden and bedrock. The consistency and duration of the database suggests that the collection of ground water levels from all monitoring locations four times a year could be reduced.

At certain nested overburden well locations (*ex.* 13-91) the deeper monitoring well shows a higher piezometric level than the well closer to ground surface. In many instances where this occurs the deep overburden well was drilled to the bedrock contact. Thus, the piezometric surface measured in the deep well installation is likely reflective of the bedrock condition and an upward flow gradient from the bedrock to the overburden.

Finally, there are noted differences in the water table condition and piezometric surfaces across the Site. It is important to realize that the Site lies at the brow of the Scugog River lands as depicted in Figure 3. Thus, the easternmost series of monitoring wells portray an elevated water level relative to the rest of the Site in both the overburden and bedrock regimes owing to

this topographic difference. The schematic also provides insights into the preferential direction of flow in the vicinity of the old landfill site. For the new landfill site, Figure 4 illustrates Cell 1 on top of brow. However, as noted above in Section 2.1.2.1, the bedrock depth increases to the south.

2.1.2.2.2 Hydraulic Conductivity and Ground Water Velocity

The velocity of ground water can be approximated using the Darcy flow equation:

$$v = \frac{Ki}{\eta} \qquad \text{Eqn. [1]}$$

where υ = average velocity of ground water movement [L/T];
K = bulk hydraulic conductivity [L/T];
i = hydraulic gradient [L/L];
η = effective porosity [L^3/L^3]

Based on in situ falling-head tests, the horizontal hydraulic conductivity (K) of the till overburden was determined to range from about 10^{-6} to 10^{-7} m/s with an average (geometric mean) value of $4x10^{-7}$ m/s. The K value was largely dependent on the presence/absence of sand seams or potential desiccation within the tested interval. The K value for the granular interbedded sand was slightly higher than the till, averaging about $8x10^{-7}$ m/s.

The horizontal hydraulic gradient in the shallow overburden outside the landfill footprint is in the range of about 0.005 to 0.05 in a west, southwest and northwest direction (Figure 5). Based on this range of hydraulic gradient, an assumed effective porosity of 0.3 and the higher geometric mean hydraulic conductivity of $8x10^{-7}$ m/s for the granular interbedded material, the theoretical horizontal ground water velocity in the overburden is estimated to range from 0.4 to 8.0 m/a. With the landfill operations commencing in 1980, this would translate to a mean lateral distance of 16 to 320 m away from the landfill or part way under the WPCP lagoons.

As noted above, the dominant ground water flow direction in the till overburden is vertically down. The vertical hydraulic conductivity of the till and bedrock has not been measured. It is expected that the vertical hydraulic conductivity is at least one order of magnitude lower than the horizontal hydraulic conductivity. This is a common assumption based upon the general horizontally layered nature of most overburden and bedrock materials (Freeze & Cherry, 1979).

Under the old landfill site, it is suggested that the vertical hydraulic gradient was as high as 1. This would yield an estimated vertical flow velocity of ~8 m/year. The till was suggested to be

up to 9 m thick so theoretically speaking, the leachate movement into the bedrock conceivably could have occurred within a year.

In-situ packer tests were carried out on bedrock wells (Hydroterra Limited, 1993). Water bearing fractures were intercepted within the upper three meters of the bedrock (referred to as the upper bedrock aquifer zone) at each of the six bedrock wells tested. The packer testing established that the penetrated bedrock intervals had relatively higher bulk hydraulic conductivities compared to the overburden, ranging from about $3x10^{-6}$ to $7x10^{-5}$ m/s, with a geometric mean of $3x10^{-5}$ m/s or one and half orders of magnitude faster than the overlying soils from a lateral perspective and two and half orders of magnitude faster than the overlying soil from a vertical perspective.

In addition to packer testing, pumping tests were carried out on upper bedrock wells by Hydroterra Limited (1993) to evaluate bulk bedrock aquifer characteristics. Transmissivity values were estimated to be in the range of 1 to 35 m^2/day ($1x10^{-5}$ to $4x10^{-4}$ m^2/s). Using a bulk aquifer thickness of 3 m, the bulk horizontal hydraulic conductivity of the upper bedrock aquifer is estimated to be in the range of $1x10^{-4}$ to $4x10^{-6}$ m/s.

The horizontal hydraulic gradient in the bedrock aquifer is typically about 0.005 to 0.05 in a west to north westerly direction (Figure 6). Based on this range of hydraulic gradient, an assumed effective porosity of 0.05 and the geometric mean of the bulk hydraulic conductivity value from the packer tests (*i.e.,* $3x10^{-5}$ m/s), the horizontal ground water velocity in the upper bedrock aquifer is estimated to range from about 100 to 1,000 m/a. Ground water flow modeling indicated that the horizontal bedrock ground water velocity is likely in the upper portion of this range (Golder, 1996).

However, not all lateral bedding plane fractures flow at this rate. Hydraulic testing of 55-98-II in 2006 showed an estimated hydraulic conductivity of $3x10^{-7}$ m/s or two orders of magnitude below the reported geometric mean presented above.

All of these concepts are quite important. Laterally, the leachate movement in the overburden soils has (at the theoretical upper bounds), spanned half the length of the Site. Thus, ground water monitoring in the till unit can be used to verify this truth. Vertically, the leachate migration has long ago reached the underlying bedrock contact and this too can be assessed. However, the rapid flow in the bedrock in comparison to the vertical flux from the overburden is going to significantly dilute the leachate contribution and this also needs to be expected in evaluating the geochemical profile at the landfill.

2.1.3 Ground Water and Leachate Quality Monitoring Program

The requirements of the ground water and leachate monitoring program are outlined in Schedules B, C and D of the current amended landfill ECA. The ground water and leachate monitoring in 2024 was conducted in accordance with the ECA requirements.

This evaluation will focus on the geochemical trends that have been detected. The entire database was used in order to fully comprehend the trend data over time. The analysis was not concerned with the occasional data point which resulted in an anomalously low or high detection. In the context of the overall database trends this anomalous data can be easily identified and/or discounted.

All ground water and leachate quality data is presented in Appendix E.

2.1.3.1 Leachate Indicator Parameters

UEM (2010) identified chloride, ammonia, phenols, phosphorus, and toluene as the ground water "leachate indicator parameters". Each of the parameters is generally geochemically independent of each other, and an elevated concentration of these parameters occurs at the leachate wells completed within the old landfill cell (6-90-II, 7-90-II, 7-90). It appears that these parameters have continued to be used in the longer term and are supported by the existing geochemical database.

Over the past decade, the geochemical database has evolved and it is suggested that other indicator parameters may prove more valuable to the Site evaluation process as trends have been tracked. Some additional parameters that were also assessed included: alkalinity, calcium, dissolved organic carbon (DOC), iron, sulphate, Total Kjeldahl Nitrogen (TKN), barium, boron, electrical conductivity and total dissolved solids (TDS) which have been used at other landfill sites in the Kawartha Lakes area.

Four key parameters when elevated tend to define the presence of leachate waters being: chloride, sulphate, total ammonia and iron. Chloride is a readily solubilized parameter that is commonly found at elevated levels in large landfill operations. Average chloride values in the leachate are at least an order of magnitude higher than that measured in the background bedrock wells and almost two orders of magnitude higher than in background overburden wells. As with many of these indicator parameters chloride will readily move with the leachate impacted waters and hence is a good parameter to assess contaminant transport.

Ammonia is a geochemically reduced nitrogen parameter. Facultative bacteria that biodegrade the organic content of the emplaced wastes will use oxygenated nitrogen species as an oxygen

donor for biosynthesis and thereby reduce nitrogen parameters to its most reduced state (*i.e.,* ammonia). Total Kjeldahl Nitrogen (TKN) is a reflection of this ammonia content; but also includes organic nitrogen and therefore is useful to discerning the degree of ammonia content in the overall nitrogen concentration. Traditionally, the ammonia concentration in the old landfill is three to four orders of magnitude higher than the background water quality owing to the biodegradation processes on-going in the landfill. The temperature increase in the vibrating wire piezometers also attests to the biological processes evident in the waste mound.

Phenolics evaluation is a legacy parameter that was used in the past to assess the organic content of the host water when other organic evaluation techniques were not available. However, this parameter does not trend as readily or as significantly as other parameters. Toluene is being used to also assess the organic content since the presence of BTEX compounds appear to be the most prevalent compounds detected in the volatile organic compound scans. However, BTEX is not routinely detected relative to other indicator parameters. A final general parameter used to assess the organic content in water samples is DOC. Elevated DOC measurements can be easily related to leachate migration; but this parameter only trends after the other indicator parameters have identified the leachate influence and thus is considered a support parameter. Elevated barium concentrations have been known to occur especially as a complexed organic compound. Thus, an elevated barium measurement along with elevated DOC can be used to identify potential leachate impacted waters.

Waste biodegradation will also release phosphorus within the waste mound. The phosphorus concentration in the waste mound is two orders of magnitude higher than in the background water quality. Phosphorus migration is attenuated to a greater degree than some of the other indicator parameters noted above, so this parameter only trends after the other indicator parameters have identified the leachate influence. It can be useful in discerning leachate migration as a support parameter. However, the variance in phosphorus concentrations in the ground water at the Site may be influenced by the fact that historically it has been represented by both total and dissolved phosphorus. Typically, more turbid water samples will influence these concentrations by dissolution of phosphorus bound to the particulate in an acidified bottle (total), whereas this condition would be avoided in the dissolved analysis. As such, this parameter should be viewed with caution.

Leachate is chemically stronger than most natural ground water and can have many elevated parameters. A reflection of this chemical strength is elevated major ion parameters such as calcium and carbonate (*i.e.,* alkalinity). The elevated chemical strength is also reflected in the electrical conductivity of the water and the dissolved content present (*i.e.,* TDS).

As noted above, the leachate water quality is often in a depleted oxygen state (*i.e.,* anoxic). An anoxic state can alter specific elements significantly, including iron and manganese. Since these are earth elements and prevalent in the environment, their concentration provides an opportunity to assess the water redox state with elevated iron and manganese concentrations indicative of an anoxic condition.

Sulphate is used for two reasons. First facultative bacteria can scavenge oxygen from sulphate and thereby alter the sulphur content to a more reduced state. Thus, the absence of sulphate or its decline over time can be indicative of this process which is associated with leachate impacted waters. Sulphate can also be elevated in bedrock settings and is therefore used to discern between overburden and bedrock waters. It is also noted that elevated boron concentrations have been detected elsewhere in the natural bedrock environments of the Kawartha Lake region, but is also a common leachate indicator parameter at many Sites.

The intent of this expanded list of indicator parameters is to justify elevated measurements by cross-correlating to other elevated indicator parameters and thereby reducing false positives for any one indicator parameter.

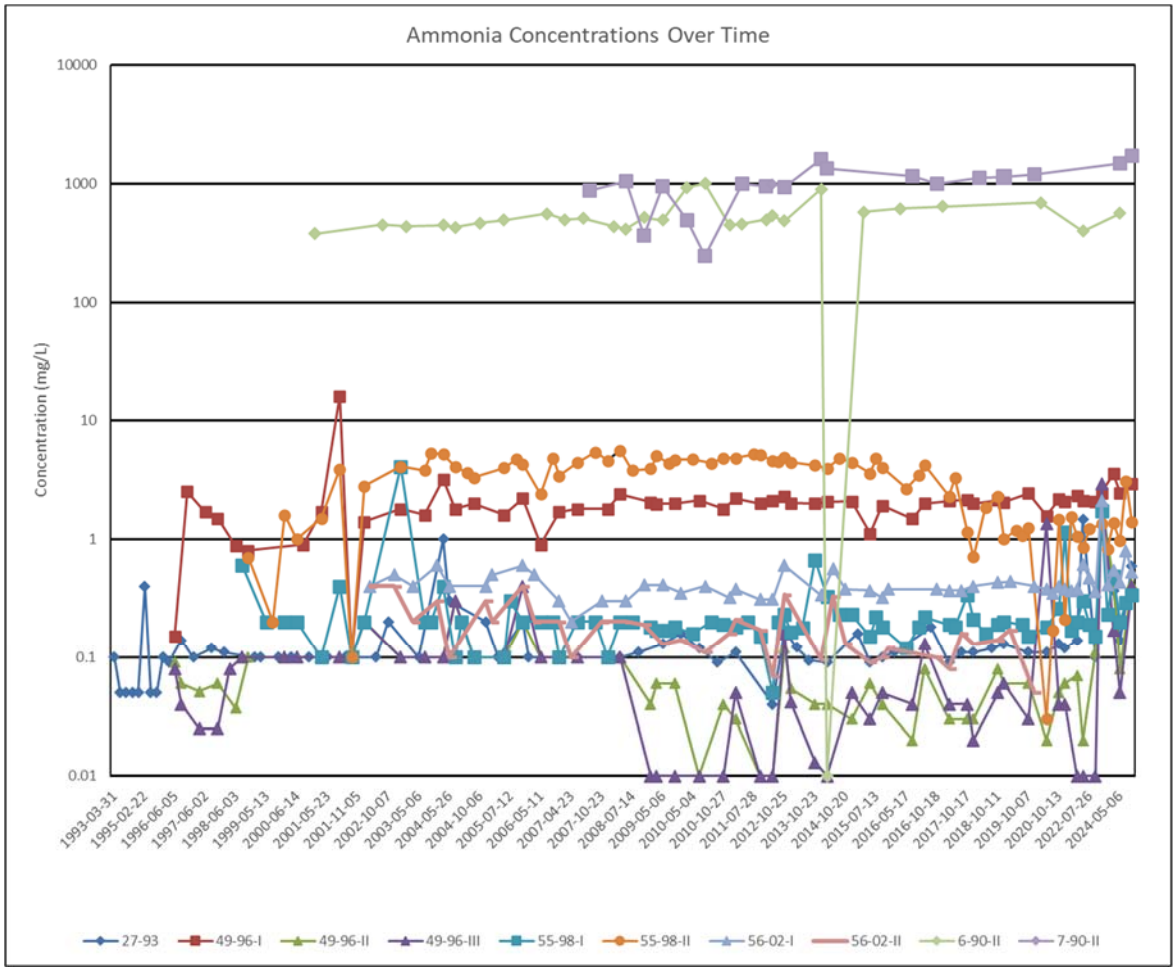
2.1.3.2 Background Ground Water

Background locations at the Site include MW49-96-II, MW49-96-III and MW56-02-II targeting the overburden, while bedrock background locations include MW27-93, MW49-96-I, MW55-98-I, MW55-98-II and 56-02-I. With the exception of MW27-93, which is located southwest of the waste mound, the remaining monitoring wells are southeast of the historical waste mound. Although based on ground water flow patterns, MW27-93 could be considered transgradient, it has been included as it is one of the original designated background locations for the Site such that it has been maintained given its consistent background water quality signature. Beyond these locations, several other locations could also be considered background locations given their location south of the historical waste mound. As such, consideration should be given to reduction in monitoring well locations in this area.

Some variability of ammonia and TKN with concentrations have been observed on occasion at some of the locations, but in the absence of other parameter trends are not interpreted to be leachate sourced.

It is noted that elevated chloride concentrations are found at varying degrees at all locations except 27-93 as indicated in Tables 1 & 2 (below), which are surmised to be sourced to road salt impacts derived from Wilson and County Road 36 to the east. These well nests have nevertheless been included for defining the range of background concentrations for the

indicator parameters. The time trend graphs for the background locations have been provided in Appendix F which shows selected indicator parameter concentrations at these two wells from 1993 to 2024. Overall, the 2024 data follows within the historical range for all leachate indicator parameters at all locations. Further, ammonia concentrations over time are also shown in the graph below for all background locations to illustrate the relative consistency and difference from the leachate wells.



The bedrock well at the background monitoring well nest 49-96 (*i.e.,* 49-96-I) has historically indicated chloride and total ammonia (as N) concentration ranges of 65 to 260 mg/L and 0.2 to 16 mg/L, respectively; which are in excess of background values at the upper bedrock well 27-93. The other anomalous parameter at 49-96-I is calcium, which was quite low historically (~12 mg/L), although more recently showing increasing concentrations (~30 mg/L). However, concentrations are still well below background concentrations at 27-93 (~70 mg/L). Theoretically, if the landfill was the source of the elevated chloride and total

ammonia, then higher concentrations of calcium would be anticipated. It would appear that the screened interval depth is associated with an isolated closed fracture which provides a unique geochemical signature.

Two additional bedrock wells, 55-98-I and 55-98-II with screened intervals between 11.5 and 13.4 mbgs and between 16.8 and 18.6 mbgs, respectively, were installed in September 1998 adjacent to 49-96-I (screened interval between 12.7 and 15.0 mbgs). The historical ground water sampling at these wells and the other background wells has yielded the following concentration ranges for chloride and total ammonia:

Table 1: Background Bedrock Monitoring Well Summary

Bedrock Well	Screened Interval		Chloride (mg/L)		Total Ammonia (mg/L as N)		Tritium
	(mbgs)	(mASL)	Range	Ave	Range	Ave	(TU)
55-98-I	11.5 – 13.4	254.2 - 252.3	33 - 168	80	<0.1 - 4.1	0.3	14.2
56-02-I	>9.8	<253.9	75 - 161	108	<0.1 – 2.1	0.5	
49-96-I	12.7 – 15.0	252.6 - 250.3	65 - 260	118	<0.1 - 16	2	12.4
27-93	11.0 – 15.0	243.6 - 247.6	0.5 - 15	5	<0.1 - 2.0	0.2	
55-98-II	16.8 – 18.6	248.8 - 247.0	94 - 858	536	<0.1 - 5.6	3	1.5

Also shown in the above table are the results of tritium analyses conducted in 2014. The low value of 1.5 tritium units obtained for the deeper well 55-98-II compared to the shallower bedrock wells is indicative of relatively inactive “old” water pre-1953 and supports the hypothesis of negligible flushing of naturally occurring salts. Beyond the details for the bedrock wells, a more complete summary of average concentrations relative to leachate is show below. It further illustrates the large differential in magnitude for leachate indicator parameter concentrations between leachate and background despite some variance observed across the background network.

The higher tritium concentrations for the shallower bedrock wells indicate mixing with post-1953 water. However, the consistently low calcium concentration at 49-96-I is unique to this calcium-magnesium carbonate (*i.e.,* limestone) environment. Neither 49-96-I or 55-98-II is considered indicative of the conductive lateral bedding plane fractures which convey bedrock ground waters across the Site. This is likely the result of isolated fractures as is evidenced by relatively slow recovery rates at 49-96-I, or possible hydraulic connection to surficial influence at 55-98-II.

Table 2: Summary of Background Water and Leachate Quality Monitoring Data for the Leachate Indicator Parameters

Indicator Parameter	Background Ground Water Quality (1990 - 2024)*								Leachate Quality		
	Overburden Wells			Bedrock Wells							
	49-96-II	49-96-III	56-02-II	27-93	49-96-I	55-98-I	55-98-II	56-02-I	6-90-II	7-90	7-90-II
Chloride	100	86	111	5	118	80	536	108	1,174	997	1,633
Ammonia	0.1	0.2	0.2	0.2	2	0.3	3	0.5	530	424	1,038
Phosphorus	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.1	1.3	4	4
Phenols	0.001	0.001	0.001	0.001	0.001	0.001	0.01	0.001	0.04	0.1	0.1
EC	859	889	987	460	934	717	2,032	838	10,828	19,682	16,195
TKN	0.3	1	4	1	2	0.4	3	1	599	444	1,104
Alkalinity	253	296	262	211	329	234	278	250	4,297	12,451	6,560
Calcium	113	141	90	68	15	72	85	91	158	87	148
Iron	0.3	0.1	0.2	1	0.1	1	0.3	1	10	10	21
Sulphate	69	64	124	35	22	36	17	38	22	39	27
Boron	1	0.2	0.1	0.1	1	0.1	1	0.1	9	7	18
Barium	0.1	0.1	0.1	0.1	0.04	0.3	1.4	0.2	1	1	0.4
DOC	2	3	3	2	2	2	2	2	380	291	460
TDS	528	522	615	271	540	419	1,115	458	6,830	7,967	9,448
Toluene	1	0.5	0.5	0.5	1	0.5	0.5	0.5	2	1	15

2.1.3.3 Leachate Quality (Old Landfill Area)

Four leachate wells were screened within the waste fill in the old landfill area: 6-90, 6-90-II, 7-90 and 7-90-II. The locations of these wells are shown in Figure 2A. Leachate 6-90 was installed in 1990 and decommissioned in 2000 due to damage. Well 6-90-II was installed in 2000 at essentially the same location as 6-90. In 2019, the well was re-drilled in October to a depth of 14.3 mbgs (*i.e.,* 255.7 masl).

Leachate Well 7-90 was installed to the base of the waste fill in 1990. In December 2007, the 50 mm PVC pipe from well 7-90 was removed due to a blockage and the well over-drilled and re-installed to a depth of approximately 11 m within the waste fill. Sampling resumed at well 7-90 in October 2008. This well was re-drilled in October 2019 to a depth of 15 mbgs due to another blockage.

Leachate Well 7-90-II was installed by the City in December 2006 approximately 125 m northwest of 7-90 and consists of 50 mm PVC threaded pipe and a 3 m long machine slotted PVC screen, installed to a depth of approximately 14 m in the waste fill. The screened interval was packed with silica sand and bentonite seals were placed above the sand.

In 2024, leachate samples were collected from all leachate monitors with the exception of 6-90-II due to it being damaged during the October 2024 monitoring event.

Table 2, in the previous section presents a summary of the most recent leachate concentrations for leachate indicator parameters. The historical data for the leachate monitoring wells indicates fluctuating concentrations for chloride at ~1,000 mg/L, total ammonia (above 400 mg/L) and phosphorus, and decreasing concentrations for phenols and toluene presumably due to biodegradation. These trends are illustrated in the chemistry over time graphs provided in Appendix F.

2.1.3.4 Overburden Ground Water Quality (Old Landfill Area)

Tables G1-G4 (Appendix G) identify the landfill leachate indicator parameters that were detected above background levels at overburden wells installed near the west, east, north, and south perimeter of the old landfill area including south of Lagoon Road in the Contaminant Attenuation Zone (CAZ). In each case, the trend in concentration of the indicator parameter(s) is described.

Of the indicator parameters, landfill impacts are most frequently represented by elevated chloride concentrations relative to background. This finding supports the selection of chloride as a key indicator of leachate impact. It was found that an increased iron concentration was also indicative of the leachate influence as was a decrease in the sulphate concentration owing to microbial activity. The presence of elevated total ammonia concentrations was also used to identify leachate influences. As an outcome of the influence, electrical conductivity measurements also increased.

2.1.3.4.1 North Perimeter

In 2024, the only remaining well along the north perimeter of the old landfill was at Well Nest 43-93 located at the northeast corner of the old landfill area, although MW32-93 well nest is also in that vicinity, albeit further northeast. Most of the wells along the north perimeter were decommissioned in the Fall of 2016 to allow construction of the new landfill Cells 4 and 5 (north half).

At these wells, a slight increasing chloride trend was noted, while most of the remaining concentrations have been noted to be more consistent, or within a predictable range if short term variation is noted. Ammonia concentrations were low and consistent at these locations with the exception of a slight rise of ammonia at 43-93-II starting in 2022. However, the elevations were variable with no defined upward trend such that the remaining consistency in leachate parameter concentrations would indicate they are likely not an obvious sign of leachate influence. This is supported by their more transgradient location relative to the waste mound.

2.1.3.4.2 West Perimeter

Adjacent to the west perimeter of the old landfill area, leachate influence was detected in 2024 at 15-91-I, 15-91-II, 16-91-I and 16-91-II, similar to previous years. These wells are within approximately 15 m of the landfill limit and are west (downgradient) of the perimeter collector. In 2024 and similar to previous years, the greatest impact adjacent to the west perimeter was at the 16-91 well nest. Chloride concentrations remained elevated at this location (i.e., ~300-500 mg/L for 16-91-I). 16-91-II also shows a degree of seasonality with diluted readings in the Spring. This seasonality is not observed at 16-91-I, which shows consistent trend data. It is noted that the chloride concentrations at 15-91-I & 15-91-II have shown an overall declining trend over the past ten years.

Total ammonia was also elevated at well nests 15-91 and 16-91, while the concentrations were generally found to fall within a predictable range over for the period or record with more stability observed the past 7 years. The May 2022 concentration at 15-91-I (8.87 mg/L) was more significantly elevated than historical values, although a lack of other leachate indicator parameters (LIPs) showing a similar trend and decreasing concentrations in 2022-2024 would indicate this trend is isolated. Beyond the developing stability, a slow but continuous declining trend for ammonia has been noted at 15-91-II and 16-91-II over the same period.

Well nest 17-91 lies at the southwest corner of the former landfill and does not detect significant leachate impacts. With ground water flow toward the northwest, this installation is considered parallel to the lateral landfill contaminant gradient. General stability over time was noted for most leachate parameters, although longer term chloride trending is noted at both intervals with recent increasing trends noted at 17-91-I over the past 8 years. Given similar trends are not noted for most of other LIP's with other LIP's indicating continued stability over time, the chloride trend is not considered to be sourced to a major shift in leachate conditions in the area. Similarly, ammonia and TKN concentrations were noted to be elevated at both intervals during the past three years. Given these isolated trends, they will continue to be tracked moving forward.

Well 19-91 is also offset from the landfill edge by about 50 m and has not detected any evidence of a significant leachate influence. However, similar chloride and more recent ammonia trends as noted above at 17-91 are observed at 19-91, as well as at another southwest corner location 18-91. The trends are also observed at 23-07 and 27-93, although much more muted for chloride. Despite these trends, the fact that the timing of ammonia and chloride trends differ and other notable leachate indicator parameters are not showing the same trends, would speak to the expected downward flow of ground water within the overburden sediments. It is also noted that the chloride concentrations are still below

100 mg/L and lower than the monitoring locations along Lagoon Road, which would indicate that road salt influence may be the source of the trending chloride concentrations. As noted in Section 2.1.2.2.1, the estimated lateral migration extent in the overburden was noted to be between 16 and 320 m. The limited leachate presence, beyond chloride and low ammonia concentrations 50 m downgradient (*i.e.,* 19-91) would infer limited contaminant migration. Well 19-91 is cross gradient to the leachate flow regime.

Overall, the stabilizing or decreasing concentrations for most leachate parameters at the west perimeter wells likely reflect the effect of the geomembrane final cover which was installed in 2007.

2.1.3.4.3 South Perimeter

Along the south perimeter of the old landfill area (*i.e.,* along the north side of Lagoon Road), the two most interesting well nests are 14-07 and 23-07 since they were both moved in order to construct the landfill cap in 2007. In both instances, when the wells were re-established in 2007 and offset south of their original location; the parameter concentrations declined from those original reported. The offset distances were relatively small; but made a significant difference to the reported monitoring values being recorded at these locations. These findings illustrate the impervious nature of the overburden soil and the inability of leachate parameters to migrate away from the waste cell.

Wells 36-93 and 38-93 lie ~100 m south of the landfill and are the furthest perimeter monitoring locations. Both locations show background concentrations, although 36-93 does report an elevated iron concentration. The 36-93 well log suggests the well screen is across a more sandy unit than 38-93 which may account for this difference.

The next closest series of monitoring wells are well nest 35-93, 37-93 and 39-93, which are situated ~50 m from the landfill. The deep wells at these locations are situated immediately above the bedrock contact. In the deep wells, indicator parameters are generally close to background. A slight chloride trend over time is evident at all three locations; but more stable over past five years. Wells 37-93-I and 39-93-I also show an elevated iron concentration, albeit minimal compared to background levels. The final note is elevated concentrations of ammonia and TKN in 2022, 2023 and 2024 at all the above noted locations either at or beyond the historical range for these parameters. It is also noted that these elevations are somewhat variable with no defined increasing trend. Similar trending is observed at other locations, including background locations, such that these trends in the absence of other leachate indicator parameter trends over the same period would suggest they are not potentially sourced to the landfill.

The shallow wells at these three locations show a greater leachate influence. Upward chloride concentration trends were evident with 39-93-II recording the highest values at ~550 mg/L (2020); however, have been more stable since. Given the lack of similar trends with other parameters, they may be more related to road salt application on the adjacent road as noted for other locations along western perimeter. Iron concentrations are also elevated at 37-93-II, albeit variable. Similarly, iron concentrations have been elevated at 35-93-II; but have declined and remained relatively stable in recent years.

Given the distances these monitoring wells are from the waste cell, the influences are considered minimal. Some upward trends may be expected at these monitoring locations; but the historical rate of increase is negligible. The three decades of monitoring has defined this trend data and the degree of variation to be anticipated year to year.

Finally, the remaining southern perimeter wells immediately adjacent to the landfill cell (wells 13-91, 18-91, 25-91 and 29-93) show varying degrees of leachate impact. The majority of these wells are screened about ~4 to ~5 mbgs where a sandier seam has been observed. 13-91-I is a deep monitor situated immediately above the bedrock contact. Indicator parameters for 13-91-I are quite stable, with the exception of a subtle increasing chloride trend and ammonia / TKN elevations during the past two years. The remaining parameters trend slowly, if at all. No significant leachate impacts have been detected based on the 30 years of monitoring.

In contrast, 13-91-II, 29-93 and to a lesser extent 25-91 all have elevated chloride concentrations that have ranged below 100 mg/L; but tend to be above this threshold and as high as 589 mg/L (13-91-II in 2018). The chloride concentration for well 13-91-II has been trending upward since 2014 not unlike 29-93; but has shown to be seasonally variable within a historic range without exceeding the maximum concentration since 2018. This seasonal variance follows many others which are observed to have much lower concentrations during the spring monitoring event, which could be attributable to a compromised annual seal which creates dilution when the overburden water table is high in the spring.

Elevated iron concentrations are also noted for all three of these monitoring wells and a decline in sulphate has also been observed at 13-91-II, although it has shown to be more variable the past few years.

The detection at these locations given the age of the landfill is not of considerable concern. The data suggests that the leachate migration away landfill in the overburden is not substantial based on 40 years of operations and 30 years of monitoring.

2.1.3.4.4 East Perimeter

All wells adjacent to the east perimeter of the landfill are located hydraulically upgradient of the landfill at a distance of 70 to 130 m from the landfill. In 2024, concentrations of the indicator parameters at these wells were generally within the range of background values (Table G3 – Appendix G).

2.1.3.5 Upper Bedrock Ground Water Quality (Old Landfill Area)

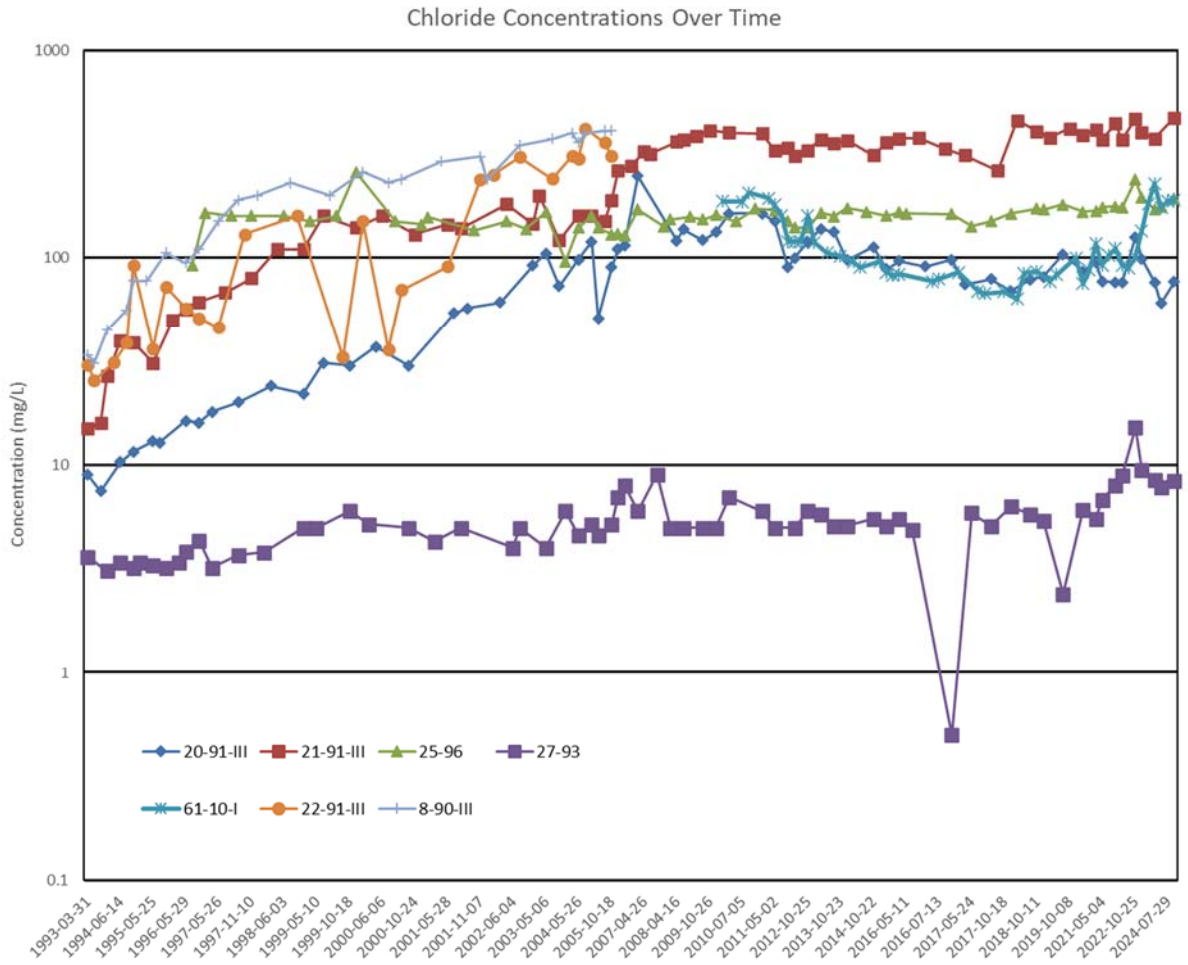
For the purpose of this discussion, natural (background) water quality for the upper bedrock is considered to be represented by the range of monitoring data from wells 27-93, 55-98-I and 56-02-I (refer to "overall range" for the upper bedrock in Table 1). The following assessment of landfill impacts on bedrock ground water quality focuses on the bedrock wells located along the perimeter of the old landfill and screened within the upper 3 m of bedrock. The upper 3 m of bedrock is generally more permeable (due to fracturing) than the deeper bedrock and is expected to be the primary transmission zone of contaminant migration from the landfill (Golder, 1996). The bedrock monitoring wells along the perimeter of the old landfill area, which are screened within the upper 3 m of bedrock, are: 20-91-III, 21-91-III, 25-96 and 61-10-I. A summary of the trends for the indicator parameters at these six bedrock wells is provided below.

The chloride concentrations of these monitoring wells as shown in graph on the following page illustrate the influence the old landfill has on the underlying bedrock aquifer. Vertical percolation of the landfill leachate has allowed for a portion of the contaminant mass to distribute into this lateral flow system as expected.

The existing database is sufficiently long enough to show the origins of this influence on several of these monitoring wells (*i.e.,* 20-91-III and 21-91-III). As shown in the graph above, the chloride contamination increased over time which infers that the contaminant flux through the overburden soils was sufficiently slow enough for this plume development to be captured by the monitoring program. All of the surrounding bedrock monitors show a similar increase within the same general timeline.

In the case of wells 20-91-III and 21-91-III, this increase continues until an equilibrium condition is established. This equilibrium condition occurs when the vertical contaminant flux into the underlying bedrock cannot grow any further due to a steady state vertical permeability condition being established under the landfill. This is evident at 25-96 which has established that equilibrium by the time this monitoring well was constructed yielding a relatively constant chloride concentration at this sampling point.

Furthermore, the influence of the landfill capping is also expressed in this data with the decline of the chloride concentration at well 20-91-III and later at well 61-10-I, although has found to increase again, likely owing to the active waste area approaching this location in recent years. As summarized in Section 2.1.2.2.1, the volume of leachate diminishing over time following the cap emplacement would lessen the contaminant flux into the underlying bedrock. In fact, the lag at which this occurs gives an indication of the vertical transmission rate that has historically existed at the Site.



Both of these findings are quite important to the overall assessment. The equilibrium condition establishes an upper bound to the contaminant flux into the underlying bedrock aquifer and would establish a steady state plume delineation based on the constant flux percolating into the bedrock unit. In Section 2.1.2.2.2, the vertical velocity into the shallow bedrock aquifer was estimated to be about a year. However, the monitoring data would suggest it took

appropriately 10 years to break through based on the above noted data, thus it is inferred that the vertical permeability was about two orders of magnitude lower than the lateral estimate as opposed to the order of magnitude estimated in Section 2.1.2.2.2.

However, the hydraulic response (*i.e.*, mound reduction) through media can occur about an order of magnitude faster than the chemistry trends, which accounts for the perceived time lag with the cap construction before concentration reduction began to be seen in the monitoring wells. It is also speculated that the cap's influence on the underlying environment is not uniform across the landfill since virtually no change in the steady state condition occurred at well 25-96 and 21-91-III. These findings are used for chloride since it is deemed to be a conservative parameter and will readily move with the ground water condition.

The same equilibrium condition is established at Well 25-96 for flux of ammonia into the bedrock aquifer. At 25-96 the total ammonia has measured ~3 mg/L for the past two decades. Well 21-91-III rose slower and appears to have achieved an equilibrium condition as of 2012 at ~1.2 - 2 mg/L.

In fact, many of the bedrock monitoring wells tend to show major and minor ion chemistry at constant levels which attests to the steady state condition which is established rapidly in the bedrock environment. As such, the water quality within the underlying bedrock is not expected to shift significantly over time with the current landfill configuration and operations.

2.1.4 Lagoon Wells

There are currently eight monitoring wells/well nests located along the exterior and central containment dykes of the lagoon system. Wells 30-93, 31-93, 59-05 and 60-05 are overburden wells, whereas well nests 45-95, 46-95, 47-96 and 48-96 have one well in the overburden (-II well) and one well in the upper bedrock aquifer (-I well). It is also noted that wells 30-93 and 31-93 lie in close proximity to each other and are screened across the same depth. In contrast, wells 59-05 and 60-05 also lie in close proximity to each other; but are screened across different depths with 59-05 screened immediately above the bedrock contact and 60-05 screened higher in the soil profile. Finally wells 45-95-II and 46-95-II are also screened immediately above the bedrock contact whereas 47-96-II and 48-96-II are screened about a meter above the bedrock contact. As a result, the 46-95-II and 59-05 responses are similar to the bedrock well 46-95-I.

Subsequent to 1999, the lagoons have been used for sludge storage and/or equalization storage, except for Lagoon 1 which has been pumped out and used as part of the stormwater management system for the landfill expansion area. Any sludges are periodically pumped out of the lagoons to ensure optimal operation of the lagoons. The supernatant in Lagoon 6 was

sampled in October 2011 and gave chloride and total ammonia concentrations of 150 and 41 mg/L, respectively. An analysis of the rate of leakage and total ammonia transport through the overburden soil layer below the lagoons is presented in Golder (1998).

In 2011, an assessment of the exceedances of the Water Pollution Control Plant ECA total ammonia trigger concentration of 9 mg/L at the lagoon monitoring wells 46-95-I (upper bedrock) plus 46-95-II and 59-05 was completed by Golder (September 2011). The primary source of the elevated total ammonia concentrations was reported to be leakage from Lagoon 6, which had been used for sludge storage over an estimated twelve-year period and had reached its sludge storage capacity. The City removed much of the sludge from Lagoon 6 during 2012 and 2013 and repaired the berms. The ammonia concentrations showed a declining trend with time due to this remedial work and removal of the ammonia-rich biosolids. The decreasing trend was evident at bedrock well 46-95-I and 46-95-II, 59-05, although has since increased again to levels that are above the 2011 values indicating that similar remedial actions are required to be completed again. Similar conditions were also observed at 30-93 and 31-93, although the ammonia concentrations have not shown the recent increasing trends noted at the other locations with concentrations becoming stabilized. This relates to the overall flow patterns discussed previously where vertical migration into the bedrock represents the primary flow path relative to horizontally through the limited permeability till overburden.

2.1.4.1.1 Overburden Wells

In general, the chloride concentration at all overburden monitoring locations is ~100 mg/L and has been at that level over the period of record for the monitoring wells. There is a degree of variation in some of the well data; but nothing of concern.

At well 30-93, the total ammonia concentration has steadily risen from 0.1 mg/L (2002) to ~10 mg/L in 2021 and has been noted to be in decline since. A similar increase was noted at 31-93; but commencing in 2007 and has maintained a relatively stable concentration (7-9 mg/L). This elevated total ammonia concentration is also measured at 47-96-II and varies subtly over the same range, albeit more elevated in recent years. In contrast, 48-96-II and 60-05 show a total ammonia concentration generally below 1 mg/L over their period of record, although some isolated elevations have been noted the past few years similar what is observed in the background locations suggesting it may not be related to the lagoons.

An elevated iron concentration is also prevalent at the overburden monitoring wells and suggests an anoxic condition associated with the sewage lagoons, which is anticipated. Most monitoring wells are reporting an iron concentration between ~1 and 15 mg/L in 2024. Well 45-95-II and 60-05 generally shows lower iron concentrations with concentrations declining the

past several years at 49-95-II. The DOC in these monitoring wells is also slightly elevated (~1 – 10 mg/L).

2.1.4.1.2 Bedrock Wells

Unsurprisingly, the chloride concentration in the underlying bedrock is also ~100 - 250 mg/L (including 46-95-II and 59-05), except at 48-96-I which has historically been lower but trending up slightly in recent years to ~70 mg/L.

The total ammonia concentration at 46-95-I (plus 46-95-II and 59-05) had trended up from 1 mg/L (1996) to ~20 mg/L (2011) and then declined presumably due to the biosolids removal which occurred in 2011 to ~3 mg/L by 2015 before trending up again to ~30 mg/L (2022 - 2024). However, this response is unique to this area of the Site. At 47-96-I and 48-96-I, the total ammonia concentration has varied around 0.3 mg/L and been as high as 3 mg/L and as low as 0.1 mg/L. At 45-95-I, the same general variability is noted although more muted with concentrations generally falling around ~1 mg/L.

Iron concentrations are elevated suggesting anoxic conditions. At 46-95-I (plus 59-05 and 46-95-II), the iron concentration is trending up from ~3 mg/L in 1997 to ~14 mg/L (2024). A downward iron trend has been observed at 45-95-I over the past ten years from ~5 to ~2 mg/L. At 47-96-I the iron varies at about 0.3-2 mg/L. However, at 48-96-I, the iron concentration was originally about 0.1 mg/L; but has fallen to around 0.03 mg/L over the past eight years, although shows low concentration seasonal variability.

A downward trend in sulphate to non-detectable levels occurred by 2008 at 46-95-I and by 2006 at 59-05; but these are the only monitors to measure this trend. In contrast, sulphate concentrations have increased at 45-95-I since 2007 from ~40 to ~425 mg/L by 2010, although steadily decreasing since. The previous increase and longer-term trend could be attributed to potential alum-based compounds commonly used in the sewage treatment process. The remaining locations have consistent concentrations of ~10 mg/L.

Beyond the parameter specific trends noted above, 45-95-I indicated significantly different water quality during the May and October 2024 monitoring events with some concentrations being an order of magnitude larger. Given similar deviations were not observed at the shallower interval, it is uncertain as to the source of the elevated concentrations. These trends will be reviewed in 2025 with additional data collection to assess whether these values are representative or potential causes for the deviation in water quality.

Appendix H provides a comparison of the lagoon monitoring well water quality to Provincial Water Quality Objectives (PWQO). Similar to previous years, the data for 2024 indicates concentrations greater than PWQO for several parameters as summarized in Table 3 below. These PWQO exceedances tend to correlate with the parameters noted above (*i.e.,* iron,); but also include a couple other parameters including cobalt and aluminum.

Table 3: PWQO Exceedances in Lagoon Wells

Well No.	Iron	Aluminum	Cobalt
Overburden Monitoring Wells			
30	S / F	-	S / F
31	S / F	-	S / F
45-II	-	-	-
46-II*	S / F	-	-
47-II	S / F	S	-
48-II	S / F	S	-
59*	S / F	-	-
60	F	-	-
Bedrock Monitoring Wells			
45-I	S / F	-	-
46-I	S / F	-	-
47-I	S / F	-	-
48-I	-	-	-

Notes: * geochemistry indicative of the bedrock water quality
- no exceedances reported in 2024
S –spring sampling exceedance in 2024
F – fall sampling exceedance in 2024

The inferred anoxic conditions permit higher iron water solubility concentrations owing to valence shift (*i.e.,* ferrous iron). Cobalt was exceeded at 30-93 and 31-93, but concentrations are still considered negligible and have been detected on occasion historically. Aluminum concentrations are not considered as concern as it is an abundant natural earth element so its presence in ground water is not unexpected.

Beyond the general water quality parameters, BTEX compounds are also sampled for these locations which did not indicate any exceedances in 2024.

2.1.4.2 Perimeter Collector Water Quality (Old Landfill Area)

Schedule C of the amended landfill ECA requires that the perimeter Leachate Collector Pumping Chamber (LPC-1) adjacent to the old area of the Lindsay-Ops Landfill Site be monitored monthly

for a comprehensive list of water quality parameters. Further monitoring for parameters including additional major ions, additional trace metals, free cyanide, nitrilotriacetic acid (NTA), pesticides, radionuclides and trihalomethanes is required on a semi-annual basis (*i.e.,* May and October). LPC-1 is shown on Figure 2B.

In 2024, leachate samples were collected monthly from LPC-1, as summarized along with historical data in Appendix B. Laboratory Certificates of Analysis are also provided in Appendix I.

The perimeter leachate collector system collects ground water and leachate. In the past and prior to 2005, the perimeter collection system also collected surface water run-off. The surface water entered the collector via a catch basin near the old landfill entrance area, which was subsequently sealed and covered with waste. The Golder (2019) report indicated that this surface water and ground water ingress is believed to be diluting the landfill leachate component. Hence, the concentrations of contaminants in the perimeter collector system pumping chamber tend to be lower than leachate concentrations within the landfill such as at leachate wells 6-90-II, 7-90 and 7-90-II.

It is acknowledged that the LPC-1 chemistry data is more dilute than the leachate monitoring well chemistry. In some instances, the difference is considerable. For example, the leachate quality wells at the base of the landfill have consistently recorded chloride at ~1,000 mg/L over the past decade, if not longer. In contrast, the LPC-1 data has measured a chloride concentration at ~100-200 mg/L.

While the difference between these two measuring points could be reconciled through dilution, it is felt the volumetric requirements for the ingress of “clean” water are not rational. Percolation through the waste mound to the landfill base yields a stronger leachate signature then the capture at the periphery of the waste mound. For example, the water quality at 16-91-I is comparable to the LPC-1 data. This follows the Site conceptual model which indicates vertical migration is the dominant flow path versus horizontally through the till overburden.

Prior to 2006 and the cap emplacement, the key LPC-1 indicator parameter data was trending upward (*i.e.,* chloride, ammonia, iron, *etc*.). Once the cap was constructed, the LPC-I chemistry stabilized in terms of chloride, calcium, conductivity and alkalinity following an abrupt downward shift in concentration. Other indicator parameters (*i.e.,* total ammonia, DOC, sulphate) declined more slowly before stabilizing. Thus, the cap has had a significant mitigating effect on the collection system water quality.

Originally the LPC-1 chloride data had trended upwards from ~100 mg/L (1991) to ~450 mg/L (2005); but then dropped by 2006 to ~200 mg/L. Since then, the chloride trend in the LPC-1 data is remarkably consistent. A seasonal variation is evident where the chloride concentration declines to ~100 mg/L; but consistently returns to the 200 mg/L threshold every summer season.

The ground water evaluation in the sections above suggest that the landfill leachate is diffusing outward slightly in the overburden soils, albeit to a very limited extent. This is expected and not a concern due to the low concentrations. The reduced concentrations in the perimeter collection system are also partially likely due to the capture of younger waters at the periphery of the landfill site.

Like the chloride concentration, the total ammonia data has followed a similar path. In 1991, the LPC-1 total ammonia concentration was ~1 mg/L and increased to ~90 mg/L by 2005 before falling back to ~20 mg/L by 2011 and then has remained at this level (*i.e.,* ~14 to 80 mg/L in 2024 with most concentrations below 30 mg/L). The leachate monitoring well data tends to yield 400 mg/L or more at the base of the waste mound. As anticipated, TKN mirrors the total ammonia data in the LPC-1 data.

The DOC concentrations also followed a similar trend as the total ammonia data. In 1990, the LPC-1 total ammonia concentration was ~30 mg/L and increased to ~180 mg/L by 2005 before falling back to ~20 mg/L by 2011 and then has remained at this level (*i.e.,* ~6 to 45 mg/L in 2024).

The sulphate data has also followed this trend with concentrations in 1991 at ~50 mg/L and then steady increasing to ~200 mg/L in 2002 before trending down to ~50 mg/L in 2006 and then have remained at this level since that time (*i.e.,* 7 to 100 mg/L in 2024, with most concentrations below 40 mg/L).

In general, the iron concentrations have measured between ~10 and ~70 mg/L (*i.e.,* ~6 to 1,790 mg/L in 2024) with the occasional measurement at or below 1 mg/L or above 100 mg/L. These occasional low measurements have been much less frequent once the cap was constructed.

The MECP has also required the evaluation of specific chemical suites as is discussed below. For minor ion metals, all concentrations were found at trace concentrations. Aluminum concentrations ranged from 0.06 to 2.43 mg/L. Manganese concentrations ranged from 0.47 to 1.25 mg/L owing to the geochemically reduced state of this parameter. Alkalinity as an

indicator parameter had a concentration that was elevated and ranged from 625 to 1,140 mg/L with an average of 730 mg/L.

In 2024, all cyanide samples, except the August monitoring event were below the detection limit as has been the case over the past decade. Given the single isolated detection had a concentration of 0.01 mg/L, the data could be anomolous, but the low concentration and lack of routine detections would indicate it is not a parameter of concern. Biochemical oxygen demand (BOD) concentrations were relatively low all samples below 12 mg/L. In general, this parameter has been below 15 mg/L for the past decade. Phenols were at or below the detection limit for all 2024 samples, similar to previous years. This parameter has also been below the detection limit about half the time for samples collected in the past decade. This accounts for a recommendation to remove cyanide and phenols as an indicator parameter / analyte.

Selenium was below detection limits for all samples in 2024, except the August monitoring event (0.007 mg/L). The period of record has shown to be below detection limits for the majority of samples since 1998. Further evaluation of this parameter is unwarranted. Similarly, a single mercury detection was observed in 2024 (0.00007 mg/L - April). It has never been detected above 0.6 µg/L and only detected in 10 of 188 samples run since 2002. Further evaluation of this parameter is unwarranted. A trace silver detection was observed in 2022 (0.2 mg/L). Silver was below detection limits in 2023 and 2024 and only 24 of 2,176 samples have had detections. Further evaluation of this parameter is unwarranted. Boron concentrations in 2024 varied from 0.3 to 2 mg/L and have yielded these results for the past decade. Fluoride concentrations in 2024 were below the MDL for all samples. The fluoride concentration has not been above 0.3 mg/L since 2005. Further evaluation of this parameter is unwarranted.

Low concentrations of BTEX compounds were detected in 2024. Toluene was not detected in 2024 and has been sparingly detected for 10+ years. This accounts for a recommendation to remove it as an indicator parameter. Xylenes were detected at very low levels in 5 of the 12 months in 2024, although<17 µg/L. Similarly, ethylbenzene was detected but at very low levels in on 5 occasions in 2024 at concentrations <1.1 µg/L. Benzene was consistently detected but again at very low levels at concentrations below <4.9 µg/L, which is above the ODWQS of 1 µg/L, however, most concentrations being marginally exceeded. As such, the low and consistent concentrations are not viewed as a concern.

Nitrilotriacetic acid (NTA) was not detected again for the eighth year in a row. Similarly, trihalomethanes (THMs) were not detected in 2024 and have only been detected three times at

trace levels since 2006. Further evaluation of this parameter group is unwarranted. PCBs were also not detected for the eleventh year in a row. PCBs while being recalcitrant (resistant to degradation) are highly sorptive and therefore unlikely to move with ground water at significant concentrations. Further evaluation of this parameter group is not warranted. Similarly, the organochlorine pesticide scan failed to detect any parameter above the MDL for the 18th year. Further evaluation of this parameter group is unwarranted.

Finally, a radionuclide screening yielded detections of gross-alpha particles of 0.13 and 0.5 Bq/L in both sampling events. Gross Beta detections were observed in both sampling events with concentrations ranging between 0.55 to 1.7 q/L. Both of these parameters were found at concentrations within their historical range.

The conclusions drawn from this evaluation are that the LPC-1 samples appear to be quite stable in terms of their major ion chemistry over the past decade and that other screening (*i.e.,* pesticides, radionuclide, VOC, PCB) analysis recommended in the past have been conducted over numerous years and their continued evaluation in the absence of any significant historical results is unwarranted.

2.1.4.3 Overburden and Upper Bedrock Ground Water Quality (North Expansion Area)

The north expansion area of the landfill started receiving waste in 2003 in Cell 1 (*i.e.,* most northern cell) which was constructed in late 2002. Cell 2 was constructed in the fall of 2004 and did not receive waste until December 2004. The northern halves of Cells 3 & 6 were constructed during the summer/fall of 2008, with waste receipt commencing in November 2008. The southern halves of Cells 3 & 6 were constructed in the summer of 2011 and started receiving waste in November 2011. The western portion of the northern half of Cells 4 & 5 was constructed in late 2016/early 2017 and starting receiving waste in March 2017, while the eastern portion was constructed in 2019.

The key overburden and upper bedrock monitoring wells downgradient of the active fill area during 2024 are as follows:

Table 4: Key Downgradient Monitoring Wells – Active Area

Overburden Wells (Downgradient of Active Fill Area – North Expansion)	Upper Bedrock Wells (Downgradient of Active Fill Area – North Expansion)
57-02-II 58-I 61-10-II	57-02-I 11-90 61-10-I 61-17-I 62-17-I 62-17-II 62-17-III

It is our opinion that the above-noted wells display a near background water quality based on the indicator parameters being used (Table 5 – below). The total ammonia concentrations are comparable to the background water quality data; however, subtle increasing trends are evident over the past few years, most notably at 11-90 and 58-I. These locations also have subtle longer increasing trends for chloride, alkalinity, TDS, calcium, while iron increases at 11-90 and boron at 58-I. These trends have become more stable the past few years, which might be a function of the active fill area moving south away from these monitors.

Beyond the trends noted at 11-90 and 58-I, the chloride concentrations are elevated at all of these wells and show some upward trends; but many have stabilized in recent years. Trends at these locations occurred at different time intervals. These increasing trends in the absence of other more dominant indicator parameters (*i.e.,* ammonia) is considered to represent a road salt or dust suppressant influence given the proximity of these wells to the internal road system.

Similarly, the traditional indicator parameters (*i.e.,* phosphorus & phenols) exist within the background range. The toluene concentration at 58-I is elevated and this represents a series of measurements between 2007 and 2011. Since 2011, toluene has not been detected. No other BTEX parameter detection was noted in 2024.

The same can be stated for the bedrock monitoring wells. As seen on Table 5 (below), these wells show consistent and flat / level responses for the key leachate indicator parameters, except for chloride (and those affected by chloride including electrical conductivity [EC]).

Table 5: Summary of Background & Expansion Area Ground Water and Leachate Quality Monitoring Data for Leachate Indicator Parameters

Indicator Parameter	Background & Expansion Area Ground Water Quality (1990 - 2024)*															Leachate Quality		
	Overburden Wells						Bedrock Wells											
	Background Wells			Expansion Area Wells			Background Wells			Expansion Area Wells								
	49-96-II	49-96-III	56-02-II	57-02-II	58-I	61-10-II	27-93	55-98-I	56-02-I	11-90	57-02-I	61-10-I	62-17-I	62-17-II	62-17-III	6-90-II	7-90	7-90-II
Chloride	100	86	111	267	58	60	5	80	108	101	267	117	128	49	128	1,174	997	1,633
Ammonia	0.1	0.2	0.2	0.4	0.1	0.1	0.2	0.3	0.5	0.4	0.4	0.5	0.6	0.2	0.6	530	424	1,038
Phosphorus	0.1	0.1	0.3	0.1	0.1	0.4	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1	1	4	4
Phenols	0.001	0.001	0.001	0.003	0.001	0.005	0.001	0.001	0.001	0.002	0.003	0.002	0.005	0.007	0.005	0.04	0.1	0.1
EC	859	889	987	1,399	1,000	924	460	717	838	936	1,399	1,112	1,622	979	1,622	10,828	19,682	16,195
TKN	0.3	0.5	4	1	0.4	1	1	0.4	1	1	1	1	1	1	1	599	444	1,104
Alkalinity	253	296	262	288	430	329	211	234	250	295	288	405	521	397	521	4,297	12,451	6,560
Calcium	113	141	90	146	154	131	68	72	91	120	146	126	92	86	92	158	87	148
Iron	0.3	0.1	0.2	0.4	0.5	0.4	1	1	1	1	0.4	0.2	0.2	0.1	0.2	10	10	21
Sulphate	69	64	124	42	57	92	35	36	38	31	42	22	168	67	168	22	39	27
Boron	1	0.2	0.1	0.1	0.1	0.03	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.0	0.2	9	7	18
Barium	0.1	0.1	0.1	1	0.2	0.2	0.1	0.3	0.2	0.3	1	0.5	0.2	0.2	0.2	1	1	0.4
DOC	2	3	3	2	3	3	2	2	2	3	2	7	19	3	19	380	291	460
TDS	528	522	615	829	613	541	271	419	458	555	829	613	983	565	983	6,830	7,967	9,448
Toluene	1	0.5	0.5	0.4	0.9	0.6	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	2	1	15

Notes: All values in mg/L ex All values in mg/L except toluene which is in ug/L and electrical conductivity in µohms/cm

* Data presented represents period of record average for each monitoring well

2.1.4.4 Leachate Pumping Chamber Water Quality (North Expansion Area)

Schedule C of the amended landfill ECA requires that monitoring of the north expansion Leachate Collector Pumping Chamber LPC-2 (located immediately west of Cell 1), occur for a select ("comprehensive") list of parameters on an annual basis, and for additional select ("indicator") parameters on a semi-annual basis. The results of the chemical analyses are used to characterize the leachate from the north expansion area and to address Condition No. 4.48 of the ECA. The results of leachate quality monitoring at LPC-2 for 2024 and the previous 18 years are summarized in Appendix B. Laboratory Certificates of Analysis are also provided on compact disc in Appendix I.

During 2024, the leachate pumping chamber received leachate from Cells 1, 2, 3, 6 and the north portion of Cells 4 and 5. A review of the 2024 data for the leachate pumping chamber indicates that the key leachate indicator parameters have remained essentially constant since the monitoring commenced in 2006, although some parameters show a greater range of variability.

The average chloride concentration in the leachate is ~600 mg/L which is reflective of the data trend. These chloride concentrations are approximately three times stronger than that measured at the old landfill LPC-1.

The total ammonia concentration average is ~170 mg/L which is reflective of the general trend. These total ammonia concentrations are an order of magnitude higher than that measured at the old landfill LPC.

The iron concentration average is ~20 mg/L (discounting the anomalously high August 2022 value), which is reflective of the general trend which varies between 1 and 100 mg/L. This parameter concentration is comparable to that measured at the old landfill LPC. The DOC concentrations were initially quite high (*i.e.,* ~600 mg/L in 2007); but have declined to a degree over time. In 2024, the DOC concentrations were between 11 and 25 mg/L. The DOC concentration is significantly higher than that measured at the old landfill LPC. The sulphate concentrations tend to be quite variable between 1 and 150 mg/L and average about the same as the old landfill LPC (*i.e.,* ~40-65 mg/L).

As expected, the phenols concentration is orders of magnitude higher than the old landfill LPC which is attributed to the "young" nature of the leachate signature (*i.e.,* ~0.3 *vs.* 0.009 mg/L average). Over time the expectation is that it will trend to non-detectable levels, which has been initiated already. Toluene concentrations were historically more elevated compared to the old landfill (*i.e.,* ~18 *vs.* 0.6 µg/L average), however, are only occasionally detected at either

location since 2010. Benzene is still routinely detected at both LPC-1 and LPC-2, but at relatively low and consistent concentrations.

The obvious conclusion is that the expansion area leachate quality is relatively strong and reflective of a young leachate quality and will likely decline in strength with time similar to the old landfill.

Beyond the general characterization of the leachate quality, PCBs are analyzed, but have never been detected. Given the more contemporary operations and waste screenings for the north expansion area, continued PCB monitoring is not considered necessary.

2.1.5 Reasonable Use

The Reasonable Use Guideline establishes limits for contaminant impacts along the property boundary of the landfill based on background ground water quality and the "reasonable use" of ground water on adjacent property. Where a reasonable use of ground water on the adjacent property is for drinking water, which is the case for the adjacent properties to the south, north and east of the Lindsay-Ops Landfill, the Reasonable Use Guideline stipulates that the quality of the ground water at the property boundary may not be degraded by an amount in excess of:

- 50% of the difference between background and the ODWQS for non-health related parameters (e.g., chloride), or
- 25% of the difference between background and the ODWQS for health related parameters.

For example, chloride which is a non-health related parameter with an ODWQS of 250 mg/L and average overburden and shallow bedrock background concentration of 100 mg/L, the Reasonable Use Criteria for the overburden is 175 mg/L.

The property boundary to the south of the Lindsay-Ops Landfill Site is outside the potential pathway of leachate migration from the landfill (see Figures 5 and 6) and therefore is not impacted by the landfill. This is supported by the absence of any significant leachate impacts at the furthest south monitoring wells: 36-93 (overburden), 38-93 (overburden) and 54-98 (historical - upper bedrock). Parameters that were naturally occurring at concentrations above the ODWQS at some of these monitoring wells in 2024 including iron.

The property boundary to the north of the landfill is also outside of the potential pathway of leachate migration from the landfill (see Figures 5 and 6) and is not impacted by the landfill. However, the upper bedrock well 53-98 has indicated an overall increasing trend in chloride

concentration since approximately 2003, reaching a peak concentration of 834 mg/L in 2023. Furthermore, concentrations exceeding the ODWQS were observed at well 53-98 for hardness, iron, aluminum, barium, manganese and total dissolved solids, which are considered naturally occurring. It is noted, that the increasing trend in chloride concentration reflects impacts from salt application over the asphalt surface surrounding the landfill administration building. Snow plowed from this surface was normally piled in the vicinity of this well. Iron and manganese concentrations at this well have increased since the installation of this well, reaching values of 2.1 mg/L in 2024 and 0.15 mg/L in 2024, respectively, although have been more stable for the past several years. The slightly elevated iron and manganese is considered to be the result of a valence change in the water chemistry owing to the oxygen depleted ground waters occurring naturally in the bedrock aquifer. In this anoxic environment the geochemically reduced iron and manganese have an elevated solubility limit compared to the oxygenated valence of these parameters. Both iron and manganese are readily available earth elements and thus the valence change merely permits the naturally occurring elements to be in solution. Iron-rich ground waters from bedrock well are a common occurrence in Ontario owing to this condition. The barium concentration has shown a slight rise for the period of record, but is considered more likely naturally sourced.

The property boundary to the east is at a distance of approximately 130 m from the edge of the landfill and is upgradient of the landfill relative to the direction of ground water flow (Figures 5 and 6). This boundary is not impacted by landfill leachate. Parameters that are naturally at concentrations above the ODWQS at the east boundary monitoring wells include iron, hardness and manganese.

The Reasonable Use Guideline does not apply to the west property boundary as there are no private lands in this area and there is no drinking water usage of the ground water along the ground water flow path downgradient of this boundary. As shown on Figures 5 and 6, the ground water flow path from the west property boundary is to the Scugog River, and the land between the west property boundary and the river is occupied by a wetland and the Lindsay WPCP lagoons.

2.1.6 Ground Water Trigger Mechanism

The approved trigger levels and response plans for the landfill are described in detail in Section 12 of the Design Report – Continued Use of North Expansion of Lindsay-Ops Landfill (EarthTech, 2000). The following discussion summarizes separately the trigger mechanism for the old landfill area and for the north expansion area and provides a comparison of these trigger levels to the ground water quality monitoring results obtained for 2024.

2.1.6.1 Old Landfill Area

The ground water trigger mechanism for the old landfill area applies to the following bedrock monitoring wells located downgradient (*i.e.,* west and northwest) of the old landfill area:

The trigger level for the monitoring wells identified below (*i.e.*, Table 6 - below) is a total ammonia concentration of 9 mg/L, which is based on a maximum allowable total ammonia loading of 0.6 kg/day from the overall landfill (*i.e.,* old landfill area and landfill expansion area combined).

Table 6: Old landfill Area Trigger Mechanism Results - 2024

Trigger Bedrock Monitoring Well (Old Landfill Area)	Depth to Bedrock Surface (mbgs)	Depth of Well Screen Interval Relative to Bedrock Surface (m)	Maximum Measured Ammonia Concentration
			2024
20-91-I	10.7	6.9 - 8.4	8.6
20-91-II	10.7	4.2 - 5.7	0.6
20-91-III	10.7	0.8 - 2.3	0.7
21-91-I	9.9	7.5 - 9.0	2.4
21-91-II	9.9	4.2 - 5.7	1.9
21-91-III	9.9	0.8 - 2.3	2.6
61-17-I***	4.4	4.8 - 6.3	1.0
62-17-I***	4.5	9.0 - 10.5	0.3
62-17-II***	4.5	5.0 - 6.5	0.7
62-17-III***	4.4	2.2 - 3.7	0.2

Notes: values rounded for presentation purposes
* top of well screen extends above bedrock surface by 0.6 m
*** new trigger wells installed in 2018 to replace decommissioned wells

Including these new wells, there were no exceedances of the total ammonia trigger level of 9 mg/L in 2024. Figure 7 show all of the historical total ammonia results through to the end of 2024 for the old landfill area trigger monitoring wells.

Similar to previous years, the maximum total ammonia concentration in 2024 was at 20-91-I (8.56 mg/L) which is located west of the old landfill area. Well 20-91-I has one of the deepest well screens relative to bedrock surface amongst the bedrock trigger wells and has indicated a gradual but consistent upward trending for total ammonia concentrations, which is interpreted to be associated with naturally mineralized ground water in the deeper bedrock. The shallow bedrock well at 20-91 (*i.e.,* 20-91-III) indicated lower total ammonia concentrations (*i.e.,* ~0.7 mg/L in 2024) within the background range which would support a natural source.

2.1.6.2 North Expansion Area

The ground water trigger mechanism for the north expansion area applies to the following bedrock monitoring wells located downgradient (west) of the landfill expansion area:

Table 7: North Expansion Area Trigger Mechanism Results - 2024

Trigger Bedrock Monitoring Well (Landfill Expansion Area)	Depth to Bedrock Surface (mbgs)	Depth of Well Screen Interval Relative to Bedrock Surface (m)	Maximum Measured Ammonia Concentration in 2024 (mg/L as N)
11-90	7.6	0.5* - 1.0	1.82
61-10-I	7.6	1.5 - 3.1	0.6

Notes: values rounded for presentation purposes
* top of well screen interval extends above bedrock surface by 0.5 m

The trigger level for the above trigger monitoring wells is total ammonia concentration of 3 mg/L, which is based on a maximum total ammonia loading of 0.6 kg/day from the overall landfill (*i.e.,* old landfill area and landfill expansion area combined). For the monitoring carried out during 2024, neither location exceeded the trigger limit. Figure 8 show the historical total ammonia results through to the end of 2024 for the landfill expansion area trigger monitoring wells (*i.e.,* 11-90, 57-02-I [no longer included for sample collection], and 61-10-I) which further illustrates the isolated deviation in ammonia concentrations during May 2023. A subtle increasing trend has been noted over time at 11-90, which will continue to be monitored in 2025.

2.1.6.3 Supplemental Ground Water Trigger Mechanism (Toluene)

In a memorandum from Mr. Dana Cruikshank of the MECP dated October 1, 2014 regarding review of the 2013 Annual Status Report, it was recommended that "… *a trigger mechanism be tied to one of the ground water wells that would trigger VOC sampling in surface water before the four (4) year sampling time frame …*".

In response to this request, it was proposed that a trigger be set for toluene at 0.8 µg/L (PWQO value) at shallow ground water wells 18-91 and 58-I. Well 18-91 is located near the southwest corner of the old landfill area and well 58-I is located just west of Cell 2 of the landfill expansion area. Together these proposed shallow wells allow coverage of both the old landfill and the landfill expansion areas. Should the toluene concentration exceed 0.8 µg/L on three consecutive monitoring events at either well (not necessarily the same well each time) then monitoring for VOCs at the surface water drainage ditch stations should resume at least twice per year. In 2024, the toluene concentration at these two wells was below the detection limit of 0.5 µg/L, similar to previous years.

2.1.7 Estimation of Contaminant Mass Loadings

Condition 15.1 of the ECA requires mapping of concentrations of the indicator parameters: chloride, total ammonia, phosphorus, toluene and phenols in the upper bedrock aquifer. This condition also requires estimates of mass loadings for these indicator parameters to the Scugog River from the landfill area and from the Lindsay WPCP lagoons via migration through the upper bedrock aquifer. The mapping of concentrations in the upper bedrock is presented in Figures 9A to 9E. The calculation of mass loadings is presented below.

As required by Condition 15.1, the contaminant mass loadings to the Scugog River via the upper bedrock aquifer were calculated separately for each of the three sources: the old landfill area, the landfill expansion and the Lindsay WPCP lagoons.

2.1.7.1 Old Landfill Area

The loadings from the old landfill area were calculated using the following equation:

$$Loading\ \left(\frac{kg}{day}\right) = v_{BR}\left(\frac{m}{yr}\right) \times W(m) \times H(m) \times (C_{BR} - C_{BG})\left(\frac{mg}{L}\right) \times \frac{1}{365}\left(\frac{yr}{days}\right) \times 1{,}000\left(\frac{L}{m^3}\right) \times \frac{1}{10^6}\left(\frac{kg}{mg}\right)$$

Where;

υ_{BR} = ground water flux in the upper bedrock aquifer along the downgradient (west) side of the old landfill area;

= 10 m/yr based on a horizontal hydraulic gradient of 0.003 (Figure 6) and an upper bedrock hydraulic conductivity of 10^{-4} m/s;

W = width of landfill footprint perpendicular to the direction of ground water flow in the upper bedrock aquifer;

= 270 m;

H = thickness of the upper bedrock aquifer contaminant mixing zone;
= 3 m (Golder, 1996);

C_{BG} = median of the "overall range" of background concentration in the upper bedrock aquifer (Table 1);

C_{BR} = average of maximum measured concentrations in 2024 in the upper bedrock aquifer along the downgradient (west) side of the old landfill area (*i.e.,* maximum concentrations at wells 20-91-III, 21-91-III and 62-17-III, as shown on Figures 9A to 9E).

2.1.7.2 North Expansion Area

The loadings from the north expansion area were calculated using the same equation presented above for the old landfill area, but using the following input parameters:

υ_{BR} = ground water flux in the upper bedrock aquifer along the downgradient (west) side of the current filling area of the north expansion;
= 63 m/yr based on a horizontal hydraulic gradient of 0.02 (Figure 6) and a upper bedrock hydraulic conductivity of 10^{-4} m/s;

W = width of landfill footprint perpendicular to the direction of ground water flow in the upper bedrock aquifer;
= 300 m;

C_{BR} = average of the maximum measured concentrations in 2023 in the upper bedrock aquifer along the downgradient (west) side of the current filling area of the north expansion
(*i.e.,* maximum of concentrations at wells 57-02-I, 11-90 and 61-10-I, as shown on Figures 9A to 9E).

2.1.7.3 Lindsay WPCP Lagoon Area

The loadings from the Lindsay WPCP lagoon area were calculated using the same equation presented above for the old landfill area, but using the following input parameters:

υ_{BR} = ground water flux in the upper bedrock aquifer along the downgradient (west) side of the lagoons;

= 32 m/yr based on a horizontal hydraulic gradient of 0.01 (Figure 6) and a upper bedrock hydraulic conductivity of 10^{-4} m/s;

W = width of landfill footprint perpendicular to the direction of ground water flow in the upper bedrock aquifer;
= 1,000 m;

C_{BR} = the average of the maximum measured concentrations in 2024 in the upper bedrock aquifer along the downgradient (west) side of the lagoon area (*i.e.,* average of concentrations at wells 45-95-I and 46-95-I, as shown on Figures 9A to 9E).

Table 8 below shows the calculated loadings for the indicator parameters in 2024 based on the above method of calculation. The primary loadings are for chloride, with calculated loadings of -0.1 kg/day (background more elevated) from the old landfill area, 3 kg/day from the landfill expansion area and 10 kg/day from the lagoon area. Note that the calculated loading from the lagoon area may include some loading from the landfill area, as the lagoons are located downgradient of the landfill. Furthermore, the calculated loadings for chloride from the landfill expansion area are considered to be primarily from road salt impacts at 11-90.

For total ammonia, the total calculated loading from the overall landfill (*i.e.,* old landfill area and the landfill expansion area combined) is 0.09 kg/day, which is much less than the design criteria of a maximum allowable total ammonia loading of 0.6 kg/day. Given that the dissolved phase contaminant plume is in steady state in the bedrock aquifer, this loading will not vary appreciably and is an order of magnitude below the allowable limit.

Table 8: Calculated Contaminant Loadings to Scugog River

Indicator Parameter	Median of Background Concentration Range in Upper Bedrock Aquifer [5]	Average Concentrations in Upper Bedrock Aquifer in 2024 C_{BR} (mg/L)			Loading (kg/day)		
		Downgradient[1] of Old Landfill Area	Downgradient[2] of Expansion Area	Downgradient[3] of Lagoon Area	Old Landfill Area	Landfill Expansion Area	Lagoon Area[4]
Chloride	129	126	147	148	- 0.1	3	10
Ammonia	0.4	0.7	0.9	10	0.01	0.08	5
Phosphorus	<0.1	<0.1	<0.1	<0.1	<0.002	<0.012	<0.04
Phenols	<0.001	<0.001	<0.001	<0.001	<0.000002	<0.00002	<0.0001
Toluene	<0.0005	<0.0005	<0.0005	<0.0005	<0.00001	<0.00005	<0.0002

Notes: All values in mg/L

1 average of maximum concentrations at wells 20-91-III, 21-91-III and 62-17-III in 2024

2 average of maximum concentrations at wells 11-90 and 61-10-I in 2024

3 average of maximum concentrations at wells 45-95-I and 46-95-I in 2024

4 loadings from lagoon area may include loadings from the landfill, as the lagoons are located downgradient of the landfill

5 includes median concentrations of wells 55-98-I and 56-02-I for period of record

2.2 Surface Water

2.2.1 Surface Water Hydrology

Surface runoff at the Lindsay-Ops Landfill Site is collected in drainage ditches that have been constructed along the north, east and south edges of the landfill (see Figure 10). The topography of the landfill site is such that the majority of surface runoff from the current landfill site flows towards the stormwater management facility, which is located to the west of the landfill facility. Outflows from the stormwater management facility, old landfill site and WPCP Lagoons are diverted through ditches bordering the Lagoon area and discharged in outlets on the Scugog River at SW13, west of Lagoon 2, and SW3, west of Lagoon 6. Ultimately, the runoff from the drainage ditches enters the Scugog River after passing through the Sturgeon Lake Wetland area, situated along the east bank of the river. The Scugog River flows in a northerly direction into Sturgeon Lake.

Runoff from the compost pad and any lateral seepage occurring within the sub-base materials of the pad are collected in the surface water swale that runs along the east, north, and west edges of the compost pad. Surface water collected in the swale is directed to the runoff collection pond, which has been constructed on the west side of the compost pad.

Water collected in the drainage ditches is typically shallow and the flow low and intermittent. Dry conditions or stagnant waters are typically observed in many parts of the ditches during the spring and fall sampling periods. Water quality in the drainage ditches can also be influenced by factors or sources other than the landfill, such as road salt, the Lindsay WPCP, or agricultural and other activities occurring off-Site. Factors such as stagnant water, intermittent flow and

influence of other contaminant sources often challenge the ability to adequately interpret water quality data between upstream and downstream stations, to meet water quality sampling requirements for the drainage ditches, and to collect samples representative of water quality on-Site. Therefore, these observations need to be considered when assessing on-Site water quality at the Lindsay-Ops Landfill Site. However, the number and locations of sampling stations are sufficient to adequately monitor surface water quality in and around the Site.

For reference, surface water photos from 2024 are included in Appendix J,

2.2.2 Surface Water Monitoring Program

2.2.2.1 Sampling Requirements

The current ECA (No.: A321504 last amended June 30, 2022) stipulates sampling of drainage ditch flows four times a year following rainfall events for general chemistry, biological and metal parameters. Sampling is required at two upstream locations (SW1 and SW4) and five downstream locations (SW2, SW3, SW13, SW14 and SW18) as well as two on-Site locations (SW15 and SW16) that were constructed after the completion of the landfill expansion. Monitoring of the Scugog River is also required at one upstream (McQuarrie Point) and one downstream site (Alpine Street /Pickerel Point where the Scugog River flows into Goose Bay on Sturgeon Lake). In addition, although not required by the ECA, three downstream sites in the Scugog River embayments that extend into the Sturgeon Lake Wetland (Embayments A, B and C) are also sampled in a similar manner four times a year. These sampling stations are shown on Figure 11. The ECA also requires annual sampling of upstream/downstream sites along the Scugog River and biannual (every 2 years) sampling of two downstream on-Site stations (SW3 and SW13) and two on-Site stations potentially affected by discharge from the stormwater management ponds (SW14 and SW18) for VOCs. Finally, two additional sample locations were added in Embayment B in 2019 (Nearshore 1 and Nearshore 2) to further assess iron, TSS, pH, turbidity and ammonia concentrations in the shallow inlets of the embayment. Each sample includes a field filtered and non-filtered sample for iron.

Sediment sampling for Total Organic Carbon (TOC) and total PCB concentrations at stations SW3, SW13, Embayment A, Embayment C, and McQuarrie Point was initiated at the request of the MECP in 2015 and every three (3) years thereafter. This was completed along with PCBs at all surface water locations in 2024 as per the previous schedule.

A summary of the Surface Water Monitoring requirements for the Lindsay-Ops Landfill Site is presented in Table 9:

Table 9: Summary of Surface Water Monitoring Program

Station	Parameters	Frequency
Drainage Ditches: SW1, SW2, SW3, SW4, SW14[3], SW15, SW16, SW18[3] Up- and Downstream: SW13, SW14, Scugog River (1 upstream, 1 downstream, Embayments A, B, C and Nearshore 1* & 2*)	conductivity, pH, total alkalinity, hardness, COD, chloride, fluoride, nitrite, nitrate, total phosphorus, sulphate, calcium, sodium, potassium, iron, manganese, phenols, DOC, ammonia, in-situ temperature, in-situ conductivity, in-situ pH, aluminum, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, silver, thallium, vanadium, zinc, antimony, arsenic, selenium referred to as the general water chemistry *just for pH, iron (field filtered duplicate), turbidity and TSS and in-situ dissolved oxygen, total suspended solids, turbidity	Four (4) times per year • samples shall be collected within 12 hours of the first rainfall greater than 15 mm starting from February 1, May 15, August 1, and October 1
SW3, SW13, SW14, SW18 Scugog River (1 upstream& 1 downstream) &WPC-Eff)	Volatile Organic Compounds (VOCs), Halogenated and Non-Halogenated	Biannual (every two [2] yrs)
SW3, SW13[1]	Polychlorinated Biphenyls (PCBs)	Four times per year[2]
Compost Facility: CP-1 and CP-2	The general water chemistry referred to above and total dissolved solids, strontium, magnesium, total Kjeldahl nitrogen, mercury, barium, boron, tannins and lignins	Twice (2) per year during the spring and late summer/early fall

Notes:
[1] all surface water monitoring locations, except for CP-1 & CP-2 appearing in Schedule E shall be sampled for total PCBs every three (3) years
[2] should concentrations of total PCBs at SW3 or SW13 exceed 0.001 mg/L then the City shall sample all stations in Schedule E for total PCBs for two (2) consecutive sampling events. Should the City find exceedences of 0.001 mg/L total PCBs in any samples in the following sampling events the District Office should be notified
[3] tannins and lignins are to be included in the analytical parameters for SW14 and SW18

2.2.3 2024 Surface Water Monitoring Results

2.2.3.1 Sampling Events

Monitoring events were completed on April 25, June 11, August 15 and October 10 with all river samples being able to be collected, while the ditch samples at some locations were not able to be sampled due to dry conditions (SW1 – all, SW3 – June, SW4 – August, SW13 – all, SW15 – April & June, SW16 – all & CP2 – August).

The discussion in this section focuses on a limited set of general chemistry and total metal parameters that were chosen because they are common indicators of water quality and/or reported detectable levels in at least some surface waters. PCBs that were sampled in 2024, are also discussed in this section given they were sampled in 2024. The concentrations of many of the parameters included in Appendix K, especially those of trace metals, were below respective method detection limits (MDLs) at both river and drainage ditch stations and are thus not discussed.

2.2.3.2 Scugog River

Data collected from 2017 to present for select general chemistry and total metal parameters from the Scugog River sites are summarized in tables presented in Appendix K. For comparative purposes, the Provincial Water Quality Objectives (PWQOs) for the protection of freshwater aquatic life are included wherever available. More extended data trends are illustrated on chemistry over time graphs (Appendix F) for select leachate indicator parameters.

The upstream and downstream stations along the Scugog River are sampled to monitor for potential cumulative effects in the receiving environment, including leachate from the landfill as well as the treated effluent discharge from the Lindsay WPCP. Alpine Street/Pickerel Point is located downstream of the landfill site and WPCP whereas McQuarrie Point is located upstream of the facilities. Stations at Embayments A and B were established to monitor for potential discharge of leachate impacted ground water from the closed old landfill area and the station at Embayment C for potential discharge from the north expansion area. However, the three embayment sites are downstream, as well as directly downgradient of both the landfill and the WPCP, and therefore can be influenced by either of the facilities.

The most important finding is that the downstream water quality is generally similar to upstream water quality (graph below) and there is no indication of any impairment of the water as a result of the landfill.

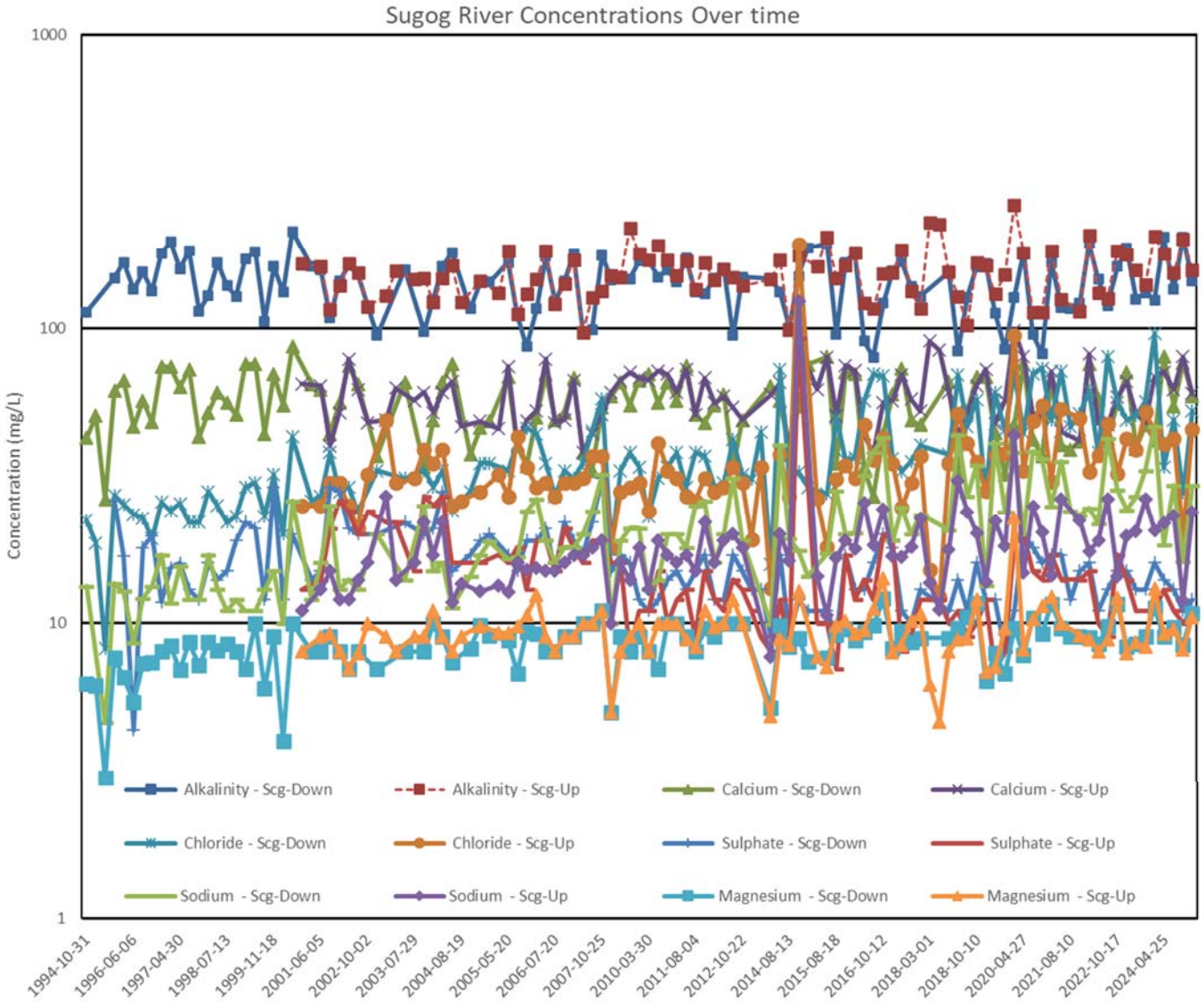
The graphic below shows the consistency in the major ion chemistry for the Scugog River sampling at the upstream and downstream locations. As anticipated, there has been no meaningful shift in the data between these two sampling points, beyond some occasional differences in sodium and chloride concentrations. This is stated because the volumetric flow through the Scugog River[1] is very much greater than the ground water seepage that is coming from the shoreline and from external areas including the WPCP property. In essence, the dilution capacity of the river very much controls the resulting water chemistry.

It is interesting to see that over time chloride is trending upward from ~30 mg/L in 1995 to peaks of ~70-90 mg/L since 2016; but this trend is consistent at both locations. The downstream location does "spike" up on occasion typically during summer or fall monitoring events; but the trend remains the same. The 2024 data suggests the relative sodium and chloride concentrations between upstream and downstream locations are marginally higher (<10 mg/L) in at the downstream with the exception of the April event, which indicated a slightly lower concentration downstream (~7 mg/L). Variability in ammonia concentrations has been seen over the past few years at both locations with concentrations ranging between 0.05 and 1.58 mg/L. However, elevations vary between both up and downstream locations such that it is more a reflection of natural or potential alternative sources with the river. The remaining LIP's do not show similar trends such that it is not obviously sourced to leachate influence. It is also noted that Embayment A, which is receptor for sewage effluent and potential ground water leachate discharge did not show more elevated concentrations in these parameters from previous years supporting the fact the trends are not likely landfill derived.

The majority of the heavy metals are not detected above the MDL or detected at trace levels.

Furthermore, the ground water assessment of the landfill influence suggests that the majority of impacted water will move through the upper bedrock horizon. The four critical landfill parameters were identified as chloride, total ammonia, sulphate and iron. Of these indicator parameters chloride is considered to be the most prevalent. However and as illustrated above, the Scugog River does not see a pronounced influence between the upstream and downstream sampling location. This is not unexpected. In Section 2.1.7 it was suggested that the bedrock flow was 32 m/yr across 1,000 m width and over a bedrock thickness of ~3 m. This yields a flow into Embayment A of ~100,000 m^3/yr.

[1] Parks Canada suggests that 17 m^3/s must flow through Lakefield to maintain a base flow at Trenton and that this requires 35 m^3/s from the Haliburton Lakes system. These type of flow requirements from the system including that flowing through Sturgeon Lake are very much greater than the Site flows (0.1 m^3/s) https://www.pc.gc.ca/en/lhn-nhs/on/trentsevern/info/infonet/eaux-water-questions


Sugog River Concentrations Over time
Concentration (mg/L)
1000
100
10
1
Alkalinity - Scg-Down
Alkalinity - Scg-Up
Calcium - Scg-Down
Calcium - Scg-Up
Chloride - Scg-Down
Chloride - Scg-Up
Sulphate - Scg-Down
Sulphate - Scg-Up
Sodium - Scg-Down
Sodium - Scg-Up
Magnesium - Scg-Down
Magnesium - Scg-Up
1994-10-31
1996-06-06
1997-04-30
1998-07-13
1999-11-18
2001-06-05
2002-10-02
2003-07-29
2004-08-19
2005-05-20
2006-07-20
2007-10-25
2010-03-30
2011-08-04
2012-10-22
2014-08-13
2015-08-18
2016-10-12
2018-03-01
2018-10-10
2020-04-27
2021-08-10
2022-10-17
2024-04-25

In comparison, the WPCP reportedly discharged ~5,000,000 m^3 into Embayment A in 2024. Both the bedrock chloride concentration and the sewage effluent had a chloride concentration of ~100 - 300 mg/L. However, the Scugog River with a chloride concentration of ~40-100 mg/L fails to detect any significant influence between the upstream and downstream sampling locations. Thus, the flow in the Scugog River is sufficiently larger than the annual WPCP discharge such that the influence is not measurable within the river.

2.2.3.3 Embayment Areas

Unlike the Scugog River, the influence of the WPCP outfall is detectable but has been very low in Embayment A historically. Key indicator parameters associated with the effluent quality are readily evident and elevated compared to the Scugog River quality or even that sampled at the other two embayment locations.

The water quality in Embayment B reflects that seen in the Scugog River given that it is upstream to the landfill and sewage treatment plant. At Embayment C, the water quality is slightly above that seen in Scugog River and is believed to represent a muted reflection of that present in Embayment A. Waters leaving Embayment A would flow downstream; but potentially in proximity to the eastern shoreline since full mixing would not occur until further afield. Presumably, a back eddy into Embayment C provides the ability to reflect this muted signature at this sampling location.

Additional locations were added in 2019 to Embayment B to target further into the inlets of Embayment C. These locations (Nearshore 1 & 2) are analyzed for TSS, turbidity, pH, ammonia and iron (filtered & unfiltered). The iron (dissolved) and ammonia results are generally comparable or within the range found at Embayment B, which would indicate seepage into the inlets of the embayment is not occurring to an extent that is distinguishable or consistent within the embayment. The continued monitoring of these nearshore locations is considered unwarranted.

During the 2024 monitoring period, the following observations were noted:

- In terms of PWQO parameters, the naturally occurring water hardness owing to the limestone setting is consistently above the standard in the Scugog River samples. Phenol concentrations were exceeded on one occasion in 2024 (0.004 mg/L at Embayment A), but have historically sporadically detected above the MDL of 0.001 mg/L at all locations in river, including upstream. Phosphorus is also routinely detected above the PWQO limit of 0.03 mg/L. A bit more sporadically detected above the PWQO limit is aluminum a naturally occurring earth element. Both of these parameters were also noted to exceed

in the upstream location in 2024. Unionized ammonia is also exceeded, which most routinely occurs in Embayment A, although was also seen at Embayment B, Embayment C, upstream and the downstream locations in 2024. The elevations at Embayment A are most likely sourced to sewage effluent, while the exceedances at Embayment C and Scugog upstream could be alternative or natural sources. Beyond these parameters the remaining detections above the PWQO limits were for copper, zinc and silver including upstream at the same concentrations such that they are not considered sourced to the landfill;

- Overall, good water quality was noted in the Scugog River in 2024 where parameter concentrations were generally similar between upstream and downstream stations throughout the year and metal concentrations low and in many cases below MDL values.

2.2.3.4 Scugog River Assessment

The focus of the MECP evaluation of the 2017 Lindsay-Ops Landfill Annual Monitoring Report was to assess whether an impact to the water quality of the Scugog River had occurred. This was accomplished by averaging the historical data and then assessing the percentage difference between stations. The issue with the technique is when anomalous and elevated results skew the average, such that this needs to be accounted for in the evaluation.

The MECP suggested that the percentage difference between stations is usually less than 100%. It was also suggested that a difference of 25% is considered significant. The percentage differences in the following table (Table 10) have been colour coded as outlined by the MECP in their previous review. All downstream sampling stations are being compared to the upstream station (*i.e.,* McQuarrie Point).

The first station downstream of the McQuarrie Point (upstream) station is the Embayment B station. The evaluation suggests that there is virtually no difference between these two stations which is anticipated. The only parameters greater than 25% are ammonia and boron. The results are similar to previous years, while the ammonia is relatively newer and is reflective of isolated elevated concentration during April 2022 and August 2023, which were an order of magnitude larger than historical values. Given the remaining 2022 and 2023 ammonia values and subsequent 2024 values were more in line with the historical range and other parameters did not show similar elevations, it is uncertain as to the source of these elevations in the absence of other more notable leachate indicator parameters. It is known that boron is evident in the upper bedrock waters and is used as an indicator parameter for that reason. However, it is unlikely that a ground water source has resulted in this difference.

The next downstream station is found in Embayment A where the WPCP and landfill discharge. As a result, numerous parameters show a difference of more than 25% and several show a significant elevated difference of more than 100% (*i.e.,* ammonia, unionized ammonia, chloride, nitrate, TKN, sodium, sulphate, potassium, aluminum & boron).

Table 10: Percent Difference Comparison Table – Scugog River

Parameter	Units	Scg-Up	Embayment B	Embayment A	Embayment C	Scg-Dwn	Percentage Difference			
							Scg-Up vs Embayment B	Scg-Up vs Embayment A	McScg-Up vs Embayment C	Scg-Up vs Scg-Dwn
pH -Lab	pH units	8.0	8.0	8.1	8.1	8.0	0%	1%	1%	0%
Conductivity	uS/cm	418	427	732	465	409	2%	75%	11%	-2%
BOD	mg/L	4	3	3	3	3	-13%	-15%	-12%	-6%
COD	mg/L	27	29	27	28	27	6%	-2%	3%	1%
Total Dissolved Solids	mg/L	238	237	405	257	236	0%	70%	8%	-1%
Total Suspended Solids	mg/L	7	8	8	7	7	9%	15%	-5%	-2%
Alkalinity	mg/L	152	143	165	141	143	-6%	8%	-7%	-6%
Hardness	mg/L	186	176	215	176	173	-6%	16%	-5%	-7%
Ammonia	mg/L	0.09	0.14	1.15	0.26	0.16	54%	1135%	180%	70%
Un-ionized Ammonia	mg/L	0.02	0.02	0.07	0.03	0.02	2%	242%	47%	14%
Calcium	mg/L	59	55	67	55	55	-6%	14%	-6%	-6%
Chloride	mg/L	35	42	106	51	38	18%	202%	44%	8%
DOC	mg/L	9	9	8	9	9	-2%	-15%	-2%	-3%
Fluoride	mg/L	0.14	0.11	0.16	0.10	0.10	-25%	11%	-27%	-30%
Iron	mg/L	0.12	0.09	0.08	0.09	0.10	-28%	-30%	-27%	-20%
Magnesium	mg/L	9	9	11	9	9	-1%	16%	1%	-8%
Manganese	mg/L	0.03	0.03	0.03	0.03	0.03	0%	21%	-6%	7%
Nitrate	mg/L	0.5	0.5	2.0	0.6	0.4	-11%	280%	10%	-16%
Nitrite	mg/L	0.08	0.07	0.13	0.08	0.07	-9%	70%	-3%	-11%
TKN	mg/L	0.8	0.9	2.2	1.1	0.9	9%	164%	29%	5%
Sodium	mg/L	19	23	64	29	21	20%	239%	55%	11%
Sulphate	mg/L	15	14	38	18	16	-6%	146%	20%	4%
Phenols	mg/L	0.001	0.002	0.002	0.002	0.002	9%	17%	30%	30%
Phosphorus	mg/L	0.05	0.05	0.04	0.06	0.04	17%	-11%	28%	-16%
Potassium	mg/L	2	2	6	3	2	8%	233%	45%	21%
Aluminum	mg/L	0.07	0.04	0.14	0.05	0.06	-35%	113%	-20%	-3%
Antimony	mg/L	0.0035	0.0030	0.0031	0.0030	0.0042	-14%	-12%	-14%	21%
Arsenic	mg/L	0.0038	0.0034	0.0034	0.0033	0.0043	-13%	-12%	-13%	13%
Barium	mg/L	0.06	0.05	0.06	0.05	0.05	-11%	1%	-8%	-21%
Beryillium	mg/L	0.035	0.030	0.030	0.030	0.024	-15%	-13%	-15%	-30%
Boron	mg/L	0.03	0.04	0.08	0.05	0.04	36%	160%	52%	23%
Cadmium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0002	-1%	-10%	-9%	228%
Chromium	mg/L	0.003	0.003	0.003	0.003	0.005	-10%	-9%	-12%	35%
Cobalt	mg/L	0.0009	0.0010	0.0010	0.0010	0.0010	10%	11%	8%	14%
Copper	mg/L	0.0032	0.0016	0.0026	0.0017	0.0022	-51%	-20%	-47%	-31%
Lead	mg/L	0.0005	0.0005	0.0006	0.0005	0.0011	-10%	6%	-9%	97%
Mercury	mg/L	0.00187	0.00062	0.00062	0.00062	0.00062	-67%	-67%	-67%	-67%
Molybdenum	mg/L	0.0009	0.0009	0.0017	0.0010	0.0013	-7%	90%	12%	38%
Nickel	mg/L	0.008	0.008	0.008	0.008	0.008	-1%	-2%	-4%	0%
Selenium	mg/L	0.004	0.004	0.004	0.004	0.005	-10%	-9%	-10%	11%
Silver	mg/L	0.0001	0.0001	0.0001	0.0001	0.0002	5%	4%	1%	187%
Strontium	mg/L	0.2	0.2	0.2	0.2	0.2	-4%	20%	-1%	-9%
Thallium	mg/L	0.00015	0.00015	0.00013	0.00017	0.00049	0%	-8%	17%	236%
Vanadium	mg/L	0.0013	0.0012	0.0011	0.0012	0.0016	-7%	-16%	-6%	22%
Zinc	mg/L	0.011	0.010	0.019	0.010	0.013	-16%	69%	-9%	14%

Most of the elevated differences can be associated with the Site operations. The nitrate, unionized ammonia, TKN, and total ammonia concentrations are anticipated to be an outcome

of a combination of the WPCP effluent and potentially other land uses in the area (ex. Agriculture and urban development). Sewage effluent is typically nutrient rich. Nutrients include nitrogen, phosphorus and potassium. The elevated sodium, chloride and EC concentrations are likely from both the WPCP discharge and the spring freshet containing road salt elements. Sulphate and aluminum are also elevated and may be from coagulants at the WPCP containing aluminum or other sources. Boron is surmised to be associated with liquid laundry detergents, which are reported to use borax and this may account in part for this detection. Finally, it is noted that many of these noted differences are only found in Embayment A and despite these concentration differences, the flow from Embayment A is insufficient to meaningfully influence the Scugog River.

The next downstream station is Embayment C. The percentage difference between Embayment A and Embayment C are considered to illustrate the limited influence Embayment A has on the Scugog River outside of the actual embayment. At Embayment C, only ammonia shows a difference greater than 100%, while the difference from upstream is only 15% of that seen at Embayment A. In total, eight parameters show a difference more than 25% being: unionized ammonia, chloride, TKN, sodium, phenols, phosphorus, boron and potassium. It is also noted that the relative differences are very minor and are lower than that shown for Embayment A.

In evaluating the data, some parameters are consistently elevated over all the stations and therefore not readily attributable to the landfill and WPCP. The focus of this assessment was to point out those parameters which trend down from the Embayment A sampling data. Sodium and chloride trend down and it is conjectured whether the waters leaving Embayment A skirt the east shoreline and back eddy in Embayment C before being fully dispersed in the river further downstream. Several of the parameters have declined an equivalent amount (*i.e.,* ~2/3) which would indicate dilution within the river is significant directly relating to the flow differential between the interpreted ground water contributions from the landfill (~100,000 m^3/year) and WPCP outflow (5,000,000 m^3/year) relative to the much more significant flow rates of the river (~0.5 to 1 billion m^3/year). It is further noted that of the 5,000,000 m^3/year of WPCP effluent discharged to the river, only about 1% of that volume represents treated leachate volume.

Finally, some parameters could be attributable from other sources. Agricultural application and runoff will provide a similar nutrient-rich signature (*i.e.,* nitrogen, potassium) as can decaying vegetation. While this is expected as a result of the agricultural fields surrounding the river in this area, there will be some nutrient provided by the WPCP effluent.

The downstream sample records show that the majority of the parameters considered above have dissipated by the Alpine Street (Scg-Down) station. An elevated ammonia concentration is shown. However, the downstream water quality also reports several elevated metal parameters unique to this one station (*i.e.,* silver, thallium, cadmium, chromium, lead and molybdenum). A series of samples collected two decades ago are elevating these parameters and could be discounted given the data collected in the intervening years which would negate the majority of the metal results.

In summary, there are some limited/sporadic concentrations of parameters that have not shown consistent presence in the samples over time and are judged to be questionable. Discounting the questionable concentrations, then the data conforms well to the upstream station. The Embayment A waters has some elevated parameters; but this does not appear to significantly influence the downstream water quality.

2.2.3.5 On-Site Sampling Locations

Data collected in 2024 for select general chemistry and total metal parameters from stations at the new compost facility and along the drainage ditches are presented in Appendix K. Past reporting has established that PWQOs are not applicable to water quality in the drainage ditches and hence data from the on-Site sampling locations are not compared to the guideline values (Golder, 2019).

2.2.3.5.1 Compost Facility

Runoff from the new compost pad and any lateral seepage occurring within the sub-base materials of the pad are directed to the surface water swale running along the east, north and west perimeters of the compost pad. The surface water swale in turn discharges into the runoff collection pond (CP-1). Water quality at station CP-2 can be influenced by water flow and other conditions in the drainage ditches off-site and thus is not entirely indicative of conditions at the compost facilities.

As per the ECA (No.: A321504), the compost pad stations were monitored in late summer and early fall, on June 11, August 15 and October 10. The data, which is provided in Appendix D indicates that a number of parameters are frequently elevated at CP-1 & CP-2 including alkalinity, ammonia, iron, chloride, TDS, COD, sodium, strontium and phosphorus. No defined trends are noted beyond some longer-term variability which fall within a consistent range over time. Given these trends are localized and not observed downstream, they are not seen as a concern. This is illustrated by the chemistry over time graphs in Appendix F.

2.2.3.5.2 Stormwater Management Facility

Stations SW15 and SW16 are located along the drainage ditch that runs along the east side of the stormwater management facility, as shown in Figure 10. Station SW15 is located at the entrance to the stormwater quality control pond and station SW16 is located further north along the ditch. Both stations are immediately downstream from the north landfill expansion area and monitored for potential effects from the expansion. Given that the north landfill expansion area is lined, it is not expected to influence water quality at stations SW15 and SW16. The drainage swale that collects run-off from the old compost facility also drains into this ditch upstream of station SW15.

The 2024 data (Appendix K) for stations SW14, SW15, SW16, and SW18 (stations SW14 and SW18 are also discussed in a later section relative to upstream drainage ditch stations):

- Table 11 below provides a summary of the leachate indicator parameters for these four stations. In general parameters tend to be comparable with minor exceptions;

Table 11: Average SWM SW Location Concentrations (2006-2024)

Indicator Parameter	SW16	SW15	SW18	SW14
Chloride	231	137	95	49
Ammonia	0.1	0.3	0.2	0.1
Phosphorus	0.2	0.2	0.2	0.1
Phenols	0.003	0.002	0.002	0.002
Toluene	<0.03	<0.03	<0.03	<0.03
EC	1201	823	744	610
TKN	2	2	2	1
Alkalinity	235	177	220	231
Calcium	119	106	95	97
Iron	3	3	1	1
Sulphate	34	34	16	19
Boron	0.1	0.1	0.04	0.1
Barium	0.1	0.1	0.1	0.1
DOC	9	8	9	8
TDS	680	474	405	346

All values in mg/L except toluene which is in ug/L and electrical conductivity in µohms/cm
Data presented represents period of record average for each monitoring well

- The chloride concentration has historically been elevated at SW16 reaching ~500 mg/L in the spring of 2007 and 2010 and the same in early summer of 2018, which it has

maintained since. This is likely sourced to road salt application within the Site. This location was noted to be dry during all events in 2024;

- This same seasonally elevated chloride concentration (*i.e.,* ~200 to 500 mg/L) is evident in the SW15 data for virtually every year since 2005 with the exception of 2024, although no samples were able to be collected in April, which is typically when concentrations are highest;
- In contrast, SW18 and SW14 have shown an increasing trend in the chloride data from ~20 mg/L in 2002 to ~100-200 mg/L in 2023 / 2024. The seasonal highs in this data tend to occur in the late summer/ early fall sampling events and could represent soil desorption when the flow in the ditches are quite low or a response to storm events;
- Historically, parameters tend to frequently exceed the PWQO limits being: hardness, iron, phenols, phosphorus and aluminum for all sampling locations;
- At SW15 and SW16 detections of chromium, copper, cobalt, lead, vanadium and zinc have been measured at slightly elevated concentrations repeatedly, although no upward trending is noted;
- At SW15 boron concentrations have been noted to be elevated but variable with an overall increasing trend from 2017 to 2020, but have subsided since; and
- Measurable concentrations of tannins and lignins continue to be detected at SW14 and SW18 in 2024. This is not unexpected since there is a measurable difference between the TKN and total ammonia results at all of these stations which supposedly reflects an organic nitrogen content like due to seasonal vegetation decay. The DOC data also suggest an organic content to the ditch corridors. This is also anticipated to account for the phosphorus concentrations that are detected at these locations. Contributing to this is the fact that the drainage is seasonal at the Site and dries out over the summer. Often and in the past stagnant waters are being sampled since the water table lies below ground surface and flow only occurs during the spring melt and regional storm events in part because the surficial tills are not overly permeable.

Overall, the surficial drainage network essentially conveys seasonal excess waters and is perched above the ground water table. The ground water flow in the overburden is vertically down and the surface drainage may contribute to some degree; but are likely limited owing to the low vertical permeability. As the excess flow diminishes past the spring freshet, water becomes stagnant in the channels owing to local undulations in the network. Small flows are typically recorded even during significant storm events; but are temporal in nature and wholly dependent on a climatic contribution to sustain the flow conditions.

Beyond the above interpretation, there is a specific requirement for reporting on the Stormwater Management ECA for the Site (No. 8401-AFST88). This report has been prepared and included as part of this report submission in Appendix L.

2.2.3.5.3 North and South Drainage Ditch Stations

Stations SW4, SW14, SW18, and SW13 are located along the north drainage ditch and stations SW1, SW2, and SW3 along the south drainage ditch. Stations SW1 and SW4 are upstream of the landfill while the remaining stations are downstream of the landfill. Any change in SW2 versus SW1 or SW14 versus SW4 is presumed to indicate an influence of the landfill and/or the WPCP sewage lagoons. However, other sources may also influence water quality in the north and south drainage ditches. Stations SW1, SW4, SW14 and SW18 are being influenced by runoff from agricultural/farming activities conducted in the area, as evidenced by elevated nitrate concentrations at SW-4 on occasion. Similarly, the upstream stations (SW1 and SW4) are also affected by road salting along the access road to the Site. Station SW14 may be influenced by the stormwater management facility, which discharges along the north drainage ditch upstream of SW14 at station SW18. Station SW18 was established in April 2015 to help ascertain whether the outflow from the stormwater management facility impacts the north drainage ditch. Finally, stations SW3 and SW13, in addition to being downstream of the landfill, are also downstream of the Lindsay WPCP, agricultural fields, and potential road runoff.

Parameter concentrations measured at the drainage ditch stations are also greatly affected by dry conditions, and low and intermittent flows often encountered in the drainage ditches. The upstream station SW1 was noted to be dry during all events in 2024, while SW4 was sampled in April, June and October. However, even when water is present, stagnant and shallow waters were often reported at these stations. The following observations were noted from review of the 2024 data (Appendix K).

<u>South Drainage Ditch</u>

- In 2024, the water quality sampling results were comparable to the historical database for these sampling locations. The database shows no obvious trend in the data. Table 12 below provides the average concentrations over the period of record for these sampling stations. It is noted that the chloride concentration diminishes away from the entry road (*i.e.,* SW1) and is attributed to road salt impacts;
- The same general trend with certain parameters was evident with this data. Overall, the difference between the TKN and total ammonia results is considered to show organic nitrogen. DOC concentrations also suggest an organic signature and the detection of phosphorus contributes to the assessment that decaying vegetative matter likely contributes to these results;

- Historically, the parameters noted in the sections above tend to frequently have elevated concentrations including hardness, iron, phosphorus and aluminum for all sampling locations. Phenols detections above the limit are more infrequent and not observed in 2024. Many of the elevated concentrations are related to shallow, stagnant conditions which increase potential for sediment entrainment, which can skew these parameter concentrations;
- Occasional elevated concentrations of chromium, copper, cobalt, and zinc are historically noted for all three sampling stations. In 2024, only cobalt and zinc were shown to have a marginally elevated concentration at SW-2;
- The data at all three locations has been shown to be stable, with variance, but within a predictable range for the period of record with the exception of elevated but variable ammonia (~0.2-1.5 mg/L) concentrations at SW3. Similarly elevated but variable barium concentrations are observed over the same period but all other indicator parameters are stable. These trends are noted but not of concern at this time. They will continue to be tracked; and
- In 2024, SW3 was analyzed for PCBs, which were found to be below the MDL value.

Table 12: Average South Drainage Ditch SW Location Concentrations (2006-2024)

Indicator Parameter	SW1	SW2	SW3
Chloride	121	110	96
Ammonia	0.1	0.2	0.2
Phosphorus	0.1	0.1	0.1
Phenols	0.001	0.001	0.001
Toluene	<0.03	<0.03	<0.03
EC	920	946	897
TKN	1	1	2
Alkalinity	307	311	302
Calcium	127	139	136
Iron	0.5	1	2
Sulphate	22	40	34
Boron	0.1	0.1	0.1
Barium	0.1	0.1	0.1
DOC	9	7	7
TDS	569	573	528

All values in mg/L except toluene which is in ug/L and electrical conductivity in µohms/cm

Data presented represents period of record average for each monitoring well

South Drainage Channel Assessment

The MECP used the same evaluation technique to assess the water quality in the north and south drainage channels. For this evaluation the same techniques are used; but with median values as was discussed above (see Table 13 below).

Table 13: Percent Difference Comparison Table – South Drainage Channel

Parameter	Units	SW1	SW2	SW3	% Differences SW1 vs SW2	% Differences SW1 vs SW3
pH -Lab	pH units	7.9	7.8	8.0	-1%	2%
Conductivity	uS/cm	920	946	897	3%	-2%
BOD	mg/L	5	4	4	-21%	-16%
COD	mg/L	25	25	23	-1%	-8%
Total Dissolved Solids	mg/L	569	573	528	1%	-7%
Total Suspended Solids	mg/L	110	47	433	-57%	295%
Alkalinity	mg/L	307	311	302	1%	-2%
Hardness	mg/L	352	398	381	13%	8%
Ammonia	mg/L	0.1	0.2	0.2	34%	64%
Un-ionized Ammonia	mg/L	0.01	0.01	0.02	-6%	45%
Calcium	mg/L	127	139	136	10%	7%
Chloride	mg/L	121	110	96	-9%	-21%
DOC	mg/L	9	7	7	-21%	-27%
Fluoride	mg/L	0.1	0.1	0.1	-13%	-12%
Iron	mg/L	0.5	0.8	2.5	73%	409%
Magnesium	mg/L	9	13	13	48%	50%
Manganese	mg/L	0.24	0.21	0.43	-12%	80%
Nitrate	mg/L	0.2	1.0	1.0	290%	308%
Nitrite	mg/L	0.1	0.1	0.1	-1%	-2%
TKN	mg/L	1.2	0.9	1.7	-25%	43%
Sodium	mg/L	67	61	52	-9%	-22%
Sulphate	mg/L	22	40	34	87%	58%
Phenols	mg/L	0.001	0.001	0.001	7%	3%
Phosphorus	mg/L	0.1	0.1	0.1	-37%	5%
Potassium	mg/L	10	4	4	-59%	-65%
Aluminum	mg/L	0.3	0.3	0.7	12%	134%
Antimony	mg/L	0.006	0.004	0.003	-34%	-43%
Arsenic	mg/L	0.005	0.004	0.004	-27%	-33%
Barium	mg/L	0.1	0.1	0.1	38%	15%
Beryillium	mg/L	0.05	0.03	0.03	-27%	-27%
Boron	mg/L	0.1	0.1	0.1	-10%	-12%
Cadmium	mg/L	0.0002	0.0001	0.0001	-55%	-49%
Chromium	mg/L	0.005	0.005	0.005	-8%	-11%
Cobalt	mg/L	0.001	0.001	0.001	-5%	6%
Copper	mg/L	0.004	0.003	0.003	-26%	-30%
Lead	mg/L	0.002	0.001	0.002	-40%	-20%
Mercury	mg/L	0.00005	0.00004	0.0003	-27%	402%
Molybdenum	mg/L	0.002	0.001	0.001	-35%	-41%
Nickel	mg/L	0.01	0.01	0.01	1%	-13%
Selenium	mg/L	0.01	0.005	0.004	-22%	-27%
Silver	mg/L	0.0001	0.0002	0.0001	57%	-1%
Strontium	mg/L	0.3	0.4	0.4	31%	27%
Thallium	mg/L	0.0008	0.0005	0.0003	-36%	-65%
Vanadium	mg/L	0.001	0.001	0.002	1%	56%
Zinc	mg/L	0.03	0.02	0.02	-12%	-39%

The first downstream station from SW1 is SW2. The evaluation has identified nitrate as having the most significant difference at 290%, while an additional seven parameters with greater than 25% difference with SW1, being: ammonia, iron, magnesium, sulphate, barium, silver and strontium.

Some of these parameters are different than those identified for the Scugog River. This is felt to be important since the concern is how Embayment A is influencing the downstream water quality. If the drainage contribution were significant then the elevated differences for the drainage channel should be reflected in the embayment water quality.

The identified differences above appear to be related to major ion species as opposed to the key leachate indicator parameters, likely due to natural variation between surface water features or alternative sources (*i.e.,* sewage effluent). Iron is an earth element and infers issues with sediment entrainment in the sampling program. The silver is sourced to a few isolated elevated concentrations which is skewing the average concentrations. The elevated nitrate parameter has been related to vegetation decay as opposed to a landfill influence. It is worthwhile to point out that nitrate concentration results in the south drain have a lower median value than that in Embayment A and thus would provide a diluting effect.

The low total ammonia concentration attests to this hypothesis of vegetation decay as does the higher TKN result suggesting presence of organic nitrogen. The sulphate difference is another indicator of sediment entrainment.

The differences at SW3 are comparable to those at SW2. The iron difference also speaks to issues with sediment entrainment especially when sample results have greatly exceeded 10 mg/L for several samples. The sampling result variability also infers entrainment issues. For example, the June 2008 sample reported an iron concentration of ~74 mg/L and also reported a manganese concentration at 18.7 mg/L, an aluminum concentration at 11.1 mg/L and elevated concentrations of boron, cadmium, chromium, cobalt, copper and lead. This event has a TSS concentration of 27,400 mg/L. There are several other instances where the TSS exceeded 1,000 mg/L in the sampling result and had similar elevated parameter concentrations.

It has been speculated by MECP historically that seepage from the lagoon system could be influencing the south drainage water quality. Azimuth would disagree with this notion. Between SW2 and SW3, both chloride and sulphate concentration diminish which are elevated within the WPCP effluent. Also, total ammonia concentration is muted at both SW2 and SW3 compared to the lagoon effluent concentrations. When evaluated as a whole there does not appear to be the data supporting this concept.

As such, these differences are not considered significant in terms of contaminant migration. They reflect challenges with sample collection when water depths are quite minimal during the summer season. The south drain dries out over the summer season which also speaks to the fact that ground water is not likely coming to surface. From above, it was shown that the ground water elevation data does not vary appreciably and is about a meter below ground surface. It was also shown that the overburden soils are not overly permeable. All of this information and the recognition that the drainage channels dry out over the summer lead to the inference that ground water contributions to the surface water condition in this area are unlikely to occur.

In this case, the total flow in the South Drainage Channel was estimated to be between 5,000 & 30,000 m^3 based on weekly flow measurements taken following spring melt in 2019 & 2021. A more significant flow period was noted in 2019 with flow observed throughout the summer, while most years do not have persistent flow past May. Regardless, the high-end range of flow is insignificant compared to other inputs into the embayment including the WPCP effluent of 5,000,000 m^3/year and flow within the river itself of 0.5 to 1 billion m^3/year. The weekly monitoring suggested that the South Drain effectively dries out by the end of June in a typical year.

North Drainage Ditch

- Table 14 below provides the average concentrations for SW4 since this data has remained constant. The data reflects data from 2015 on as of that timeframe represents the time when all locations were active;
- Several indicator parameters including: chloride, phosphorus, TKN, ammonia and iron showed an upward seasonal trend where sample concentrations generally peaked in the dry seasons. However, they have occurred within a predictable range;
- Dry season sampling is challenging due to the minimal flow present and it was observed that TSS concentrations also spiked with these elevated sampling events. It is speculated that the elevated TSS concentrations could account for the elevated indicator parameters which could be present as sorbed elements;
- The same general trend with certain parameters was evident with this data. The difference between the TKN and total ammonia results is considered to show organic nitrogen. DOC concentrations also suggest an organic signature and the detection of phosphorus contributes to the assessment that decaying vegetative matter likely contributes to these results as do the tannins and lignins measurements;

Table 14: Average North Drainage Ditch SW Location Concentrations (2015-2024)

Indicator Parameter	SW4	SW18	SW14	SW13
Chloride	35	95	73	150
Ammonia	0.1	0.2	0.2	1
Phosphorus	0.03	0.2	0.2	1
Phenols	0.001	0.002	0.002	0.003
EC	689	744	743	1026
TKN	1	2	2	8
Alkalinity	294	220	256	237
Calcium	119	95	108	132
Iron	0.1	1	2	5
Sulphate	18	16	17	36
Boron	0.01	0.04	0.03	0.1
Barium	0.04	0.06	0.1	0.1
DOC	6	9	8	9
TDS	383	405	413	590
TSS	10	74	144	629
Toluene	<0.03	<0.03	<0.03	<0.03

All values in mg/L except toluene which is in ug/L and electrical conductivity in µohms/cm
Data presented represents period of record average for each monitoring well

- Historically, the parameters noted in the sections above tend to frequently have elevated concentrations including chloride, sodium, ammonia, hardness, iron, phosphorus and aluminum for all sampling locations;
- Occasional elevations of chromium, vanadium, copper, cobalt, and zinc are historically noted for all sampling stations, albeit less frequently at SW4; and
- In 2024, SW13 was analyzed for PCBs, which were below the MDL value (see Table 3 – Appendix K).

North Drainage Channel Assessment

The same general evaluation was also performed for this drainage channel corridor (see Table 15, below).

While several parameters are the same as those identified for the Scugog River, it is noted that the most elevated or dominant parameters are not the same or not as consistent between locations. This is important information since the concern is how Embayment A is influencing the downstream water quality. If the drainage contribution were important then the elevated differences for the drainage channel should be reflected in the embayment water quality.

Table 15: Percent Difference Comparison Table – North Drainage Channel

Parameter	Units	SW4	CP2	SW18	SW14	SW13	Percentage Difference			
							SW4 vs CP2	SW4 vs SW18	SW4 vs SW14	SW4 vs SW13
pH -Lab	pH units	8.0	8.2	8.0	8.0	7.9	2%	-1%	0%	-1%
Conductivity	uS/cm	616	961	744	610	728	56%	21%	-1%	18%
BOD	mg/L	3	3	6	4	10	2%	81%	31%	190%
COD	mg/L	13	27	44	32	191	105%	231%	141%	1340%
Total Dissolved Solids	mg/L	375	531	405	346	433	42%	8%	-8%	16%
Total Suspended Solids	mg/L	10	27	74	80	330	183%	669%	734%	3341%
Alkalinity	mg/L	271	297	220	231	235	10%	-19%	-15%	-13%
Hardness	mg/L	314	391	262	265	277	25%	-17%	-15%	-12%
Ammonia	mg/L	0.1	0.2	0.2	0.1	0.6	183%	124%	43%	604%
Un-ionized Ammonia	mg/L	0.02	0.02	0.01	0.01	0.03	15%	-34%	-11%	60%
Calcium	mg/L	114	136	95	97	111	19%	-17%	-15%	-3%
Chloride	mg/L	30	114	95	49	76	282%	219%	64%	154%
DOC	mg/L	6	8	9	8	10	39%	53%	35%	63%
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0%	2%	4%	20%
Iron	mg/L	0.2	0.3	1.4	1.0	2.5	91%	783%	512%	1410%
Magnesium	mg/L	7	11	8	7	9	48%	14%	2%	26%
Manganese	mg/L	0.05	0.20	0.91	0.46	0.79	290%	1665%	795%	1429%
Nitrate	mg/L	1.1	0.8	0.3	0.3	1.2	-33%	-72%	-70%	3%
Nitrite	mg/L	0.1	0.1	0.1	0.1	0.1	-24%	-7%	1%	33%
TKN	mg/L	0.5	1.0	1.6	1.1	4.7	102%	227%	129%	860%
Sodium	mg/L	19	55	53	31	52	197%	183%	65%	177%
Sulphate	mg/L	26	29	16	19	25	13%	-39%	-27%	-2%
Phenols	mg/L	0.001	0.004	0.002	0.002	0.002	173%	61%	25%	50%
Phosphorus	mg/L	0.03	0.05	0.15	0.14	0.47	64%	463%	403%	1600%
Potassium	mg/L	2	6	5	4	5	290%	256%	144%	206%
Aluminum	mg/L	0.1	0.1	0.2	0.2	2.8	9%	67%	149%	2975%
Antimony	mg/L	0.005	0.0003	0.0002	0.003	0.004	-95%	-96%	-48%	-30%
Arsenic	mg/L	0.005	0.001	0.001	0.003	0.004	-85%	-87%	-36%	-17%
Barium	mg/L	0.1	0.1	0.1	0.1	0.1	16%	0%	2%	61%
Beryillium	mg/L	0.04	0.001	0.002	0.03	0.04	-96%	-96%	-36%	-13%
Boron	mg/L	0.1	0.03	0.04	0.1	0.1	-37%	-12%	4%	58%
Cadmium	mg/L	0.0002	0.00002	0.00004	0.0001	0.0001	-89%	-76%	-61%	-22%
Chromium	mg/L	0.004	0.001	0.001	0.003	0.005	-77%	-68%	-31%	9%
Cobalt	mg/L	0.001	0.0003	0.002	0.001	0.001	-66%	75%	33%	43%
Copper	mg/L	0.002	0.001	0.002	0.002	0.012	-34%	-4%	-12%	481%
Lead	mg/L	0.001	0.0002	0.0004	0.001	0.004	-84%	-69%	-39%	220%
Mercury	mg/L	0.00004	0.00002	0.00002	0.00004	0.00005	-49%	-47%	-7%	28%
Molybdenum	mg/L	0.001	0.0004	0.0002	0.001	0.001	-64%	-81%	-37%	-3%
Nickel	mg/L	0.01	0.01	0.01	0.01	0.01	-2%	14%	-7%	33%
Selenium	mg/L	0.01	0.001	0.001	0.004	0.00	-82%	-82%	-35%	-18%
Silver	mg/L	0.0003	0.0001	0.0001	0.0001	0.0001	-72%	-70%	-66%	-62%
Strontium	mg/L	0.3	0.4	0.3	0.3	0.3	50%	3%	-7%	4%
Thallium	mg/L	0.0012	0.0001	0.0001	0.0001	0.0002	-96%	-95%	-90%	-84%
Vanadium	mg/L	0.001	0.000	0.001	0.001	0.002	-44%	7%	39%	98%
Zinc	mg/L	0.02	0.01	0.06	0.02	0.04	-52%	138%	-31%	68%

For CP-2, the evaluation has identified 16 parameters greater than 25%, which is likely a reflection of this location having sampling events during the summer and fall where water is able to be collected when conditions are shallow and stagnant, while SW-4 is typically only

sampled in the Spring, when dilution potential is higher, therefore skewing the comparative results.

The next station downstream is SW18 which is used to contrast upstream contributions from outflows at the stormwater management system. Sixteen parameters are considered to have a difference greater than 25% from SW4; however, the most prominent parameters are COD, phosphorus, potassium, TKN, chloride, TSS, iron, and manganese; many of which would be heavily influenced by sediment entrainment as evidenced by the more elevated TSS concentrations in the downstream location. Other parameters such as ammonia, show more meaningful increases (124%), while concentrations are both ~0.1-0.2 mg/L. This illustrates that parameters with a small concentration can show significant % differences with modest parameter variations. The sodium and chloride are more prominent elevated parameters and speaks to road salt influence contribution at the Site downstream of SW-4. As noted above, the limited depth of SW-4 does not allow for sample collection during the summer when vegetative growth and stagnant conditions can provide natural influences to the surface water quality. As such the background reference values are low biased for many parameters representing only the Spring freshet.

A short distance further downstream SW14 is collected below the stormwater management system outlet. At this location, 16 parameters had a difference greater than 25% from the SW4 data, with the results correlating closely with the further upstream location. This is expected as they fall along the same channel and both are sampled more frequently during shallow and stagnant conditions are present, as noted above. The response at SW14 indicates decline in difference from the upstream location with a similar number of parameters greater than 25%, but most locations were found to decline significantly from the upstream locations indicating attenuation processes are active with distance along this channel.

The final station on the North Drainage Channel is SW13. The response at SW13 compared to SW14 is considered to be elevated and reflected in the differences noted above. Twenty-six parameters show a difference greater than 25% of that measured at SW4. As anticipated the parameters are similar to those noted above for the north drainage channel. This location always has limited water depths and stagnant conditions as illustrated by the TSS concentrations. As such, the same rationale noted above applies to this location.

This assessment while informative and useful in highlighting consistent parameters fails to illustrate the underlying situation. During the spring freshet when there is elevated surface flow, the data suggests that parameter values are diminished with the notable exception of the road salt related parameters. As the ditch dries out, summer and fall sampling event yield

elevated results owing to minimal flow and sediment entrainment which elevates concentrations, especially metal and nutrient values. As noted above, this is exacerbated due to the fact that these conditions are not characterized in the upstream location as it is typically dry beyond the April monitoring event. Beyond this, it is important to note that there is virtually no flow during these drier periods and hence no significant mass flux contribution to the embayment. Therefore, while the parameter measurements are high, there is no appreciable flow and thus no significant impairment to the embayment from the north drainage channel. This is supported by a lack of definable channel past SW14 and the fact that SW13 is routinely dry, or just ponded water in proximity to Embayment A.

Similar to the discussion with the South Drainage Channel, ground water flow into this feature is not anticipated. The drainage channel dries out over the summer months, which negate ground water flow contribution in those months. The overburden soil permeability and downward hydraulic gradient also are contrary to this concept as ground water migration would be vertical and not discharge to surface.

Finally, and like above, it has been questioned historically by the MECP whether the recent spikes in the north drain water quality are possibly due to seepage from the adjacent lagoons. Azimuth does not share this interpretation based on the available data. The argument is that the full complement of the data does not match well. For example, seasonal spikes at SW13 show increases in total ammonia, iron, manganese, and several heavy metal elements. Comparison to the WPCP effluent data would suggest that elevated parameters match for some; but not all parameters.

The chemical signature of the North Drainage Channel is not similar to that measured in the Embayment A area and it is concluded that the contribution from the drainage ditch is inconsequential to the embayment water quality.

2.2.3.6 Polychlorinated Biphenyls (Surface Water)

The PCB monitoring program includes PCB monitoring at all surface water stations appearing in Schedule E every three years with the exception of SW3 and SW13, which are sampled for total PCBs four (4) times per year, every year. If a total PCB concentration greater than 0.001 mg/L is measured at station SW3 or SW13, then all surface water stations are sampled for total PCBs for two consecutive sampling events.

In 2024 PCB monitoring was conducted at all of the stations mentioned above in both the drainage ditches and the Scugog River as well as at the compost facility. The total PCB concentrations measured in surface waters at all of the monitoring stations were below MDL

values (<0.05 mg/L) and are summarized in Appendix K. Further sampling for PCBs would appear unwarranted as inferred by the MECP recent reviews.

2.2.3.7 Volatile Organic Compounds (Surface Water)

The VOC sampling is completed every two years with the last sampling event completed in 2023. As such no samples were collected in 2024, with the next event to be completed in 2025.

2.2.3.8 Sediment Monitoring

Sediment samples were collected from upstream/downstream river stations (upstream Scugog River, Embayments A and C) and downstream drainage ditch stations (SW3 and SW13) for total PCB and total organic carbon (TOC) analysis in 2015, 2018, 2021 and 2024. The results for 2024 are listed below in Table 16.

Table 16: 2024 Sediment Quality Data

Location	Date	Poly-Chlorinated Biphenyls (PCB's)	Total Organic Carbon (TOC)
		µg/g	%
SW3	25-Apr-24	<0.3	2
SW13	25-Apr-24	<0.3	26.6
Emb-A	25-Apr-24	<0.3	16.3
Emb-C	25-Apr-24	<0.3	10.7
Scg-Up	25-Apr-24	<0.3	3.2

Consistent with the historical results, all total PCB concentrations measured in sediment samples collected in 2024 were below the detection limit (<0.3 µg/g). The TOC content at the river stations ranged from 3.2% to 16.3%, with higher percentages measured at Embayment A. At SW3 along the south drainage ditch were between 2% and 26.6% with SW13 being more elevated. The elevated TOC at SW13 may be related to the naturally rich organic muck nature of sediments in the area. The results correlated with those collected historically. With the consistency of results in TOC over time and a lack of any PCB detections, the continued monitoring of sediment is not considered warranted.

2.3 2024 QA/QC Samples

As part of the routine sampling program for the Site, duplicate samples were collected and analyzed for quality assurance purposes. In 2024, 19 QA/QC samples were collected out of 239 samples. Results are provided in the chemistry summary tables (Appendices E & K) and

were found to be generally within acceptable limits (*i.e.,* <20% variation), with the exceptions summarized in the Table 17 below listed by parameter. It should be noted that as the analytical results approach the detection limit, the precision of the analysis tends to decline, while these differences are also exaggerated with the lower detection limits and may account for some of the variation observed. Although these variances create some degree of uncertainty in the results, they are not seen as a concern at this time as all of the parameters listed had concentrations within the historical range for the corresponding parameter and location.

Table 17: QA/QC Analysis Summary Table

Parameter	Number of >20% Occurances Variance	Range (%)	
		Low	High
Unionized Ammonia	4	22	150
Total Ammonia	13	21	174
COD	10	24	90
Chloride	1		45
Electrical Conductivity	1		23
DOC	7	21	76
Iron	8	30	153
Manganese	6	22	100
Nitrate	3	22	37
TKN	6	26	164
Potassium	2	42	73
Sodium	2	97	138
TDS	1		24
TSS	6	23	143
Turbidity	5	26	93
Colour	1		40
Aluminum	7	22	46
Antimony	1		67
Barium	1		78
Boron	2	25	90
Cobalt	5	40	67
Copper	10	29	120
Lead	7	22	60
Molybdenum	6	29	67
Mercury	1		111
Nickel	5	40	86
Silver	1		67
Strontium	2	30	71
Vanadium	2	29	67
Zinc	2	46	130

2.4 WPCP Outfall

Sampling at the WPCP Outfall is completed on a quarterly basis. General chemistry parameters and total metals were measured at the WPCP Outfall on four occasions (April, June, August and October) in 2024. Select general chemistry, total metal data for the WPCP Outfall dataset is presented in Appendix K.

The concentrations of general chemistry parameters indicated concentrations in 2024 fall within the historical average, with previous elevated concentrations noted in 2021 and 2022 reduced. These previous trends were attributed to the WPCP operations, which appear to have been rectified in 2023.

As before, the concentrations of several metals such as boron, copper, chromium and zinc were observed above PWQO, but at generally consistent concentrations over time with the exception of copper which has been more consistently above PWQO the past two years. A number of parameters were seen to be consistently higher at the outlet of the WPCP as compared to the upstream Scugog River station (McQuarrie Point) including ammonia, chloride, nitrate, sulphate, TDS, aluminum, zinc, copper & phosphorus. This is not unexpected since the effluent from the WPCP contains residuals from the treatment process. Of these, increasing trends have been noted for nitrate and aluminum with increases of an order of magnitude over the past two years. As these trends correspond with the reduction of phosphorus, TKN and ammonia concentrations, they are likely associated with the treatment processes associated with the WPCP.

2.5 Landfill Gas

Schedule F of the ECA for the Lindsay-Ops Landfill Site requires that landfill gas monitoring occur monthly during frozen ground conditions and quarterly thereafter at monitoring wells 6-90-II, 7-90-I/II, 12-91-I/II, 13-91-I/II, 14-91 (replaced by 14-07 in December 2007), 16-91-I/II, 17-91-I/II, within the old landfill area, and at shallow monitoring probes GP1 to GP10 (inclusive) that were installed to the depth of the ground water table in January 2002. The locations of the monitoring probes are identified on Figure 2A.

During 2024, landfill gas monitoring occurred on eight occasions. Combustible gas is measured as a % by volume and/or as a % of the Lower Explosive Limit (%LEL). The LEL is 5% by volume. The combustible gas is interpreted to be mainly composed of methane, although gas samples were not collected and analyzed to determine individual constituents. The results of the 2024 landfill gas monitoring program are provided in Table 18 below.

Table 18: 2024 Landfill Gas Summary Table

Monitoring Well	10-Jan-24		01-Feb-24		14-Mar-24		06-May-24		26-Aug-24		15-Oct-24		20-Nov-24		13-Dec-24	
	(%Vol)	(%LEL)	(%Vol)	(%LEL)	(%Vol)	(%LEL)	(%Vol)	(%LEL)	(%Vol)	(%LEL)	(%Vol)	(%LEL)	(%Vol)	(%LEL)	(%Vol)	(%LEL)
12-91-I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-91-II	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-91-II	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-91	-	-	-	-	-	-	0	0	0	0	0	0	0	8	--	--
16-91-II	2	>100	>5	>100	19	>100	>5	>100	1.7	44	>5	>100	20	>100	0	2
17-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-91-II	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-90-II	2	>100	>5	>100	23	>100	>5	>100	1.7	>100	2.85	>100	15	>100	3	>100
7-90-I	21	>100	>5	>100	28	>100	>5	>100	>5	>100	1.15	>100	34	>100	22	>100
7-90-II	19	>100	>5	>100	26	>100	>5	>100	>5	>100	1.4	>100	20	>100	27	>100
GP 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GP 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GP 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GP 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GP 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GP 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GP 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GP 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GP 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

In 2024, methane was detected in the leachate monitoring wells 6-90-II, 7-90 and 7-90-II at concentrations greater than 100% LEL. This is expected as these monitoring wells are screened in the waste. Methane was also measured at concentrations greater than 100% LEL in monitoring well 16-91-II. Well nest 16-91 is located immediately adjacent to the northwest corner of the old landfill area and concentrations greater than 100% LEL have been noted in previous years as well. This is not unexpected due to the proximity of the waste

No significant levels of methane were obtained at the gas probes GP 1 to GP 10 installed in January 2002. These probes have historically indicated non-detectable methane concentrations.

Overall, combustible gas concentrations in 2024 were consistent with those observed in previous years. The landfill gas monitoring program indicates that methane gas from the landfill is not migrating off-Site.

During 2008, as a result of recent amendments to Ontario Regulation 347 General – Waste Management (O.Reg. 347/90) relating to the collection and utilization of landfill gas, the City re-examined the landfill gas utilization potential of the old landfill area. Landfill gas capture modeling completed by Integrated Gas Recovery Services in 2003 indicated that the collection of methane from the old landfill area was not an economically favourable endeavour for the City to undertake. In September 2008, a new study was completed by Golder that considered the effect of the newly installed geomembrane final cover system and passive landfill gas vents. The secondary assessment revealed that power generation has since become a viable option for the City.

A conceptual design plan for a landfill gas collection and flaring system, as well as an electricity generation system intended for operation of both the landfill site and the Lindsay WPCP was completed by Golder (2008) and submitted to the MECP as part of the City's Application for Funding of Landfill Gas Capture Facilities in November 2008. A design report (prepared by Comcor Environmental Ltd) was submitted to the MECP in June 2009, as per O.Reg. 347/90 (as amended). The City received an amendment to the ECA (Notice No.: 4) for the landfill gas collection and flaring system in April 2010. On November 10, 2010, ECA (Air & Noise - No.: 5211-8ASRRU) was granted.

Construction of the landfill gas collection and flaring system was carried out in 2011. Commissioning of the system and completion of the Operations and Maintenance manual in accordance with Conditions 2(1)(a) through 2(1)(e) of ECA (Air & Noise - No.: 5211-8ASRRU)

occurred in 2012. Also, in October 2015 the City commissioned a Power Generation Facility (*i.e.,* landfill gas generator) that operates under Renewal Energy Approval No.: 8446-9HSGRP.The City continues to operate the system and adds extraction wells as the landfill construction progresses.

2.6 Meteorological Monitoring

Condition No.: 67 requires that the City install an on-Site meteorological station to measure weather conditions during the operating life of the Lindsay-Ops Landfill Site. The weather conditions to be monitored are:

- ambient temperature;
- precipitation;
- barometric pressure; and
- wind speed and wind direction.

The purpose of the meteorological monitoring is to confirm estimates of infiltration and leachate generation, and to correlate with any nuisance complaints (*e.g.,* odours and litter). A meteorological station capable of providing the required data was installed in July 2003 at the top of the old landfill area. In 2006, the meteorological station was moved to the west of the administration building parking area at the north end of the Site, in order to allow construction of the geomembrane final cover system on the old landfill area. Information obtained from the meteorological station is routinely used by the City for Site operations and monitoring.

2.7 Biomonitoring Program

Condition 12.2 of the ECA requires that annual biomonitoring investigations be undertaken in February each year; however, this was recommended for removal with replacement of the program with lethality testing of the water at SW13. Given this location typically has sufficient water levels to obtain the required volume for analysis (~20 L pail), the location was shifted into Embayment A, where SW13 discharges.

The results, which are provided in Appendix M, indicated that all four sampling events (April, June, August & October) indicated a 0% impairment and mortality rate for both Rainbow Trout and *Daphnia magna* during the April, June and October sampling events, while the August event indicated a mortality rate of 20% for rainbow trout and 3.3% for *Daphnia magna.* It is noted that the control sample for rainbow trout had a 10% mortality such that the laboratory process could have some influence on the mortality rate. This is the second year for data collection and the only event of the eight completed with a measured mortality. Continued

monitoring will help to establish potential trends or whether the August results were anomolous.

2.8 Wetland Assessment

Condition 12.1 of the ECA requires that a Wetland Assessment and Impact Study be reviewed and updated every 5 years and included with the Annual Report. This report was last completed and summarized in the 2023 annual monitoring report. The next impact study would be required to be completed in 2028; however, recommendations from the 2023 study were to discontinue the program.

3.0 SITE OPERATIONS

3.1 General Operations

The Lindsay-Ops Landfill Site generally consists of two parts, the original southern disposal area that began operation in 1980 and the northerly expansion area that was approved in December 2001. The City operates the disposal site utilizing municipal staff. Major activities occurring at the Site in 2024 included the following:

- Construction of Cells 4 and 5 (South Half) Stage 1
- Disposal operations occurred in the expansion area in the north section of Cells 4 and 5. Steel plates continued to be used as alternative daily cover;
- Calibration completed to methane detection system; and
- The City continued using the residential household hazardous waste (HHW) depot which was established in September 2005.

Other minor miscellaneous works were conducted throughout the year.

3.1.1 Leachate Outbreak Inspections

Condition No. 4.47 of the ECA requires that the landfill be inspected for evidence of leachate seepage or leachate springs at least once per month. Any incidents of leachate outbreaks and remedial action taken are to be reported monthly to the Lindsay Ops Landfill Public Review Committee (PRC) and MECP District Manager as well as annually to the MECP Regional Director through submission of this Annual Report.

Inspections are conducted for leachate outbreaks on a monthly basis. Results are recorded by City staff on inspection reports. No leachate outbreaks or seeps were noted in 2024.

3.1.2 Screening Inspections

Condition No. 4.26 of the ECA requires that visual screening be installed, inspected and maintained as required. The City developed a vegetative screening plan in June 2003 and began plantings in September 2003. The vegetative plantings continue to grow, thicken and mature each year increasing the visual screening from surrounding land uses.

Inspections of new and existing screening are conducted by City Staff on a monthly basis. Observations from each inspection are recorded by City Staff on the Inspection Reports. No issues were identified in 2024.

3.1.3 Final Cover

With respect to the old landfill area, final contours were reached in the latter part of 2004. The City also added soil materials to this area from the excavation of Cell 2 of the expansion area in 2004 for pre-loading of the North Slope. Following a two-year period after closure to allow for settlement, the City initiated placement of the final cover and the geosynthetic cap on the old landfill site in 2006. Application of the liner and final capping was started on the east side of the old landfill site in 2006 and was completed in October 2007. Seeding for vegetation of the entire old landfill area was completed in 2008.

At the request of the MECP, the City began preparing an annual Cover Plan for the landfill site, beginning in December 2005. The Cover Plan shows the following:

- Areas of the landfill site where landfilling has been temporarily discontinued;
- Areas of the landfill site where landfilling has been temporarily discontinued and interim cover has been applied and vegetated;
- Areas where the active working face was compacted and covered for that monthly inspection period; and
- Bare soil surfaces.

In 2024, disposal occurred in the northeast section of Cells 4 and 5 (north half). Final cover, including topsoil and seed, and was placed on the north and south sections of Cell 2 as well as the sections of Cells 3 and 6 in 2018. Material excavated as part of the construction of Cells 4 and 5 was used as final cover. Interim cover was placed in the southeast section of Cells 3 and 6. Figure 12 (Site Operations and Cover Plan) shows cover conditions relative to the end of 2024. Figure 14 shows the proposed final contour plan for the Site.

3.1.4 Gull Management Program

Condition No.: 4.29 of the ECA requires the development and implementation of a Gull Management Program. In September 2002, the City retained a consultant to develop the gull management program and to obtain all necessary equipment, licensing and develop training program. These activities were completed during late 2002 and early 2003. The gull management program was formally implemented in March 2003 and City staff began to record daily logs for the program in September 2003. Daily log information indicated the time, day and area where gulls were observed, the estimated number of gulls observed, non-lethal control measures taken and gull reactions.

In September 2003, the City designated a Gull Control Officer and alternate. The Gull Control Standard Operating Procedure (SOP) was revised on August 15, 2014. The revised SOP indicates that equipment operators on the tipping face shall be conscious of gull activity, perform gull control as required (with either portable propane noise cannons, bangers or pyrotechnics), and record gull control activities on a daily basis.

The City employs the use of noise bangers as a method to deter gulls. The current gull control permit (Permit No. DA1417) was valid until December 31, 2024. The City did not receive any indication from the Lindsay Airport Authority that the landfill was causing bird hazard issues at the airport during 2024. The Lindsay Airport Authority is provided a copy of the annual report when completed.

3.1.5 Spills and Other Incidents

No spills or other operational events creating any environmental issues were documented in 2024.

3.2 Household Hazardous Waste (HHW) Depot

In 2024, the HHW depot operated during all hours that the landfill site was open to the public to receive residential materials. The HHW depot was operated by City Staff, except for Saturdays when the HHW depot was operated by a private contractor (GFL) on behalf of the City. All material was transported and processed by GFL.

3.3 Site Capacity

3.3.1 Quantity of Materials Received, Disposed and Diverted

3.3.1.1 Materials Received

The total amount of material received at the Site in 2024 was 35,997 tonnes. The material received was either: disposed in the landfill; segregated and stockpiled for use as daily cover

(soil material and partially composted leaf and yard material); or diverted off-Site for recycling. The total collected solid waste volume reported on a monthly basis is provided in the following table (Table 19). This volume represents ~78% of the total material received at the Site.

Table 19: 2024 Monthly Waste Volumes

Month	Total Waste Volume (tonnes)
Jan-24	2,102
Feb-24	2,281
Mar-24	2,062
Apr-24	2,734
May-24	3,572
Jun-24	2,050
Jul-24	2,620
Aug-24	2,456
Sep-24	3,310
Oct-24	3,085
Nov-24	4,007
Dec-24	1,719
Total	**31,997**

3.3.1.2 Materials Landfilled

The total amount of waste disposed at the Site in 2024 was 31,997 tonnes (including soil received that was segregated and used for daily cover). This did not exceed the annual approved rate of fill of 58,200 tonnes (Condition No.: 4.6 of the ECA).

The composition of waste received in 2024 included bulky items, compacted waste (including waste from curbside collection program), construction and demolition waste (C&D), clear bags, loose mixed waste, material recovery facility (MRF) residue, waste from public garbage cans, soil (for cover and not for cover), and street sweepings & catch basin waste.

The approved daily rate of fill as indicated in Condition No. 4.6 of the ECA is 240 tonnes per day (TPD). Short-term exceedances (no more than 2 consecutive days) are permitted with concurrence from the MECP District Manager.

A review of the daily landfill records indicate there were 6 days where there were exceedances of the maximum daily rate of fill in 2024 (Table 20). None of these exceedances occurred on

consecutive days. The following summarizes the 2024 daily exceedances of the 240 TPD waste disposal limit. The majority of these days occurred when the City undertook road clean-up and the landfill received street sweepings or excess soil.

Table 20: Daily Waste Tonnage Exceedances - 2024

Date	Total Waste Disposed (Tonnes)	Tonnes Above 240 TPD Limit	Reason
2024-03-28	398	158	Street Sweeping & C&D Wastes
2024-04-25	259	19	Street Sweeping & C&D Wastes
2024-05-02	274	34	Street Sweeping & C&D Wastes
2024-05-08	279	39	Street Sweepings
2024-05-09	353	113	Street Sweeping & C&D Wastes
2024-05-16	246	6	Cover Soils & C&D Wastes
2024-09-09	725	485	Soils & C&D Wastes
2024-09-10	345	105	Street Sweeping, Cover Soils & C&D Wastes
2024-10-03	330	90	Street Sweeping & C&D Wastes

3.3.1.3 Materials Diverted

A number of materials are received at the Lindsay-Ops Landfill Site that was diverted from disposal. This includes car batteries, goods requiring Freon removal, scrap metal, household hazardous waste (HHW) material, construction & demolition materials, electronics, wood chips, and items donated for reuse to local Habitat for Humanity. Also, 'blue box' recyclable materials (glass, cans, newspaper, magazines, PET plastic and cardboard) can be taken to the depot at the landfill by residents and businesses for recycling.

In 2024, a total of 15,085 tonnes of material were received at the Lindsay-Ops Landfill, which were diverted from disposal. This includes:

- 158 tonnes of electronics;
- 132 tonnes of HHW material;
- 2,112 tonnes of leaf and yard material;
- 2,154 tonnes of 'Blue Box' curbside recyclables;
- 288 tonnes of scrap metal;
- 6,391 tonnes of mattresses; and
- 1,781 tonnes of construction & demolition wastes
- 11 tonnes of textiles

- 0.76 tonnes of reuse materials

3.3.2 Remaining Site Capacity and Site Life

In 2024, 31,997 tonnes of waste was disposed at the Lindsay-Ops Landfill. The City began using steel plates in August 2014 as alternative daily cover in conjunction with soil/sand and this continued in 2024. The City uses approximately 22% less soil/sand as daily cover by using steel plates compared to years when steel plates were not used. Assuming a waste density of 700 kg/m^3, approximately 45,710 m^3 of airspace was used in 2024 for waste (31,997 tonnes of waste divided by 0.7 tonnes/m^3). Based on a 6:1 waste to daily cover ratio, and a density of 700 kg/m^3 for the daily cover material, approximately 5,694 m^3 of air space was used for daily cover (6,000 tonnes minus 22% for the use of steel plates divided by 0.7 tonnes/m^3). Therefore, total air space used in 2024 for waste and daily cover was 51,653 m^3.

The total approved waste disposal capacity for the north expansion fill area including waste, daily cover and interim cover is 1,487,240 m^3. In 2023, the remaining capacity reported for the Site was 511,387 m^3. A more detailed assessment of waste capacity for the Site was included as part of the Integrated Waste Management Strategy (IWMS) update (2025-2029), prepared by Dillon Consulting. Based on this assessment, the remaining capacity as of October 2024 was 298,770 m^3. The difference in volumes relates to the fact there was overfill / overbuild in other more historic areas of the Site that were unlikely accounted for in the historical capacity estimates. Given this remaining capacity and an average annual fill rate of ~51,000 m^3 (based on last five years), there is ~6 years of lifespan left at the Site. For reference, a summary of the annual volumes (waste and cover) is provided in Table 21 below. As a result of the overfill areas creating a reduction in fill capacity of current working area of the Site, there are plans to submit an ECA amendment to account for these differences.

Table 21: Annual Waste & Cover Volumes

Year	Volume (m^3)
2018	43,916
2019	45,069
2020	44,560
2021	52,524
2022	49,494
2023	58,110
2024	51,653

3.4 Leachate Collection System

3.4.1 Leachate Volumes Collected

The Leachate Pumping Chambers currently pump the following liquids to the WPCP:

- Ground water and leachate from the perimeter LCS surrounding the Old Landfill Area;
- Leachate collected by the engineered LCS constructed as part of Cells 1, 2, 3, 6 and the western part of Cells 4 and 5 (north half) of the North Expansion Area;
- Sewage from on-Site buildings and RV septage disposal station at the north end of the North Expansion Area; and
- Water pumped from the new compost stormwater pond as per its contingency plan to prevent overflow. If the water is tested to be contaminated and inappropriate for discharge to the main Site stormwater facility. It is noted that the City is approved to divert excess stormwater via the compost pond to the stormwater management ponds in former Lagoon 1.

Flow volumes are regularly monitored and recorded by operators of the Lindsay WPCP. As shown in table below (Table 22 below), a total of approximately 76,500 m^3 of ground water/leachate was pumped from the Lindsay-Ops Landfill to the WPCP for treatment in 2024. This total volume consists of 12,799 m^3 from Leachate Pumping Station No. 1 (old landfill area) and 63,701 m^3 from Leachate Pumping Station No.: 2 (north expansion area).

The ECA specifies that the average daily flow volume of ground water/ leachate from the leachate pumping chambers (combined) only exceeded 300 m^3/day based on a calendar year (Condition 4.1(ii)(c)) in February and April, 2024. These exceedances are likely attributable to increased collection associated with snow melt.

The peak permissible flow rate is set at 750 m^3/day (8.7 L/s) at any time for the combined pump station contributions to the WPCP. The instantaneous rate measured at each location was not exceeded in 2024 for either location with a maximum flow rate of 3.8 L/sec at LPS-2.

The City initiated placement of a geomembrane final cover system over the old waste fill area in 2006. The primary objective of the geomembrane cover system is to minimize leachate generation by limiting moisture infiltration into the landfill. This in turn will limit leachate exfiltration from the unlined base of the landfill and allow natural processes (*e.g.,* adsorption, bio-chemical decay and dispersion) to effectively attenuate the existing ground water impacts as well as any future releases of contaminants (predominantly by diffusion) from the landfill base. Placement of the geomembrane cover system was completed in October 2007 and has resulted in reductions in leachate generation and leachate exfiltration. This is evidenced by the

decrease in annual pumping volumes from Leachate Pumping Station No.: 1 (*i.e.,* the perimeter leachate collector system pumping chamber) from volumes of up to 28,126 m^3 in 2005 to ranges of ~10,000 to 16,000 m^3 over the past five years.

In 2024 the flow volume from Pumping Station No. 2 was 63,701 m^3, which is above last year's value of ~51,000 m^3, and approximately double the previous three year range of ~26,000 to 31,000 m^3. This could be the result of the expansion of the waste area further south over the past two years and a larger working area.

Table 22: 2024 Leachate Volume Summaries

Month	LPS No.: 1			LPS No.: 2			Combined
	Average Flow Rate (L/s)	Daily Average (m^3)	Total (m^3)	Average Flow Rate (L/s)	Daily Average (m^3)	Total (m^3)	(m^3/day)
Jan-24	0.53	45.8	1,421	2.19	189.1	5,862	235
Feb-24	0.55	49.1	1,327	2.86	255.5	6,907	305
Mar-24	0.53	46.1	1,431	2.18	188.3	5,844	234
Apr-24	0.80	69.1	2,073	3.83	330.7	9,921	400
May-24	0.53	45.6	1,412	2.33	201.5	6,246	247
Jun-24	0.35	30.6	919	2.12	183.0	5,489	214
Jul-24	0.41	35.1	1,089	2.09	180.7	5,602	216
Aug-24	0.28	23.8	738	1.57	136.1	4,218	160
Sep-24	0.24	20.3	610	1.44	124.4	3,732	145
Oct-24	0.18	15.8	491	0.75	65.0	2,015	81
Nov-24	0.16	14.0	420	0.82	70.7	2,121	85
Dec-24	0.32	28.0	867	2.14	185.3	5,743	213
Total			**12,799**			**63,701**	

3.4.2 Collection System Cleaning

Condition No.: 5.16 of the ECA requires the City to high pressure wash and video inspect the leachate collection system annually.

Jet flushing and CCTV video inspection were performed in 2024 for the North Expansion Area LCS, as well as the Old Landfill Area Perimeter Collector. The work was carried out by Nieltech Services Ltd, similar to previous years. A copy of the inspection report is provided in Appendix N. Figure 2B shows the landfill leachate collection system layout. The systems were

noted through video inspection to be draining effectively with no indication of damage or repairs required.

3.5 Other Operational Aspects

3.5.1 Dust Control Program

Condition No.: 4.27 of the ECA requires that a dust control program be carried out. In response to dusty conditions as observed by the City's Site operations staff and when complaints are received from residents in the vicinity of the Site, water is applied as a dust suppressant. Water was applied to roads and other Site areas as a dust control measure as required throughout 2024. Beyond water, calcium chloride was applied, but only once in June 2024. There were no complaints for dust received in 2024.

3.5.2 Pest Control Program

The City undertakes a regular pest control program. Miller Pest Control was on Site in the Spring and Fall to complete standard pest control measures. No concerns or complaints regarding pests were identified at the landfill in 2024.

3.5.3 Loads Refused (Landfill Disposal Privileges)

Starting in September 1994, a record of loads refused for disposal, and the reason for refusal, has been logged. A load refusal program and Standard Operating Procedure (SOP) was developed in 2014. Information is recorded for each refusal: the date, materials that would have been tipped, origin of material, vehicle type and license and reason for refusal. In 2024, waste refusal was documented by the City three times throughout the year. The incidents related to not having correct method of payment, a large HHW container which could not be unloaded and someone arriving after site had closed.

3.5.3 Operating Hours

Posted operating hours for 2024 (public) were Monday to Friday from 8:00 am to 5:00 pm, and Saturday from 8:00 am to 3:00 pm during the winter (Oct. 16 through April 30th), while summer hours are the same with the exception of the Site being closed to the public on Wednesdays (but still accepting waste from the curbside program).

3.5.4 Staff Training

City of Kawartha Lakes Waste Management Staff receives training on various aspects of waste management operations throughout the year. In spring and fall of 2024, training was completed for landfill staff that included ECA compliance and general landfill operations.

4.0 PUBLIC CONSULTATION

4.1 Public Review Committee

In 1994, a Public Review Committee (PRC) was formed for the existing Lindsay-Ops Landfill Site. That Committee functioned until about 2001, when the north expansion was approved. The original PRC disbanded as many of the residents who were on the Committee had sold their properties to the City and had moved away from the Site area.

Condition No.: 13.1 of the ECA requires the City to establish a new PRC for the Site. The PRC was re-established in the Spring of 2003 and held its first meeting on April 16, 2003. In 2024, six meetings of the PRC were held in January, March, May, July, September and November.

The City advertised for new members and welcomed three new members in 2024. The committee is comprised of eight members in total, including one Council representative. PRC meetings are open to the public and generally held at City Hall. The meeting dates, agendas and minutes are available on the City's website and are available to all residents. Each meeting provides an opportunity for area residents to stay informed of current projects and operational matters relative to the Lindsay-Ops Landfill Site.

4.2 Public Complaints

In May of 2024, a complaint was received by staff regarding a load of compost. The compost is provided to residents for free but if a request is made to have the material loaded into a customer's trailer there is a fee for this service. The resident noticed some plastic and glass in the material provided. Since the compost is screened, the contamination was likely due to recycling residue in the bucket of the equipment prior to loading the material. A refund was issued to the resident for the loading expense.

An additional complaint was received, through the MECP, in June regarding concerns about unauthorized expansion. A site visit was completed by the Ministry and it was determined that what the resident was seeing was the new gas wells installed.

5.0 PERFORMANCE OF LINDSAY WPCP

A copy of the 2024 Performance Report for the Lindsay Water Pollution Control Plant (WPCP) prepared by the Ontario Clean Water Agency (OCWA) on behalf of the City of Kawartha Lakes is provided in Appendix O.

Conclusions relevant to the landfill facility are as follows:

- All maintenance required during the 2024 operations was performed/ completed as per manufacturers' instructions by staff and/or contractors. Maintenance records are kept by Operations Staff at the WPCP for updating and for inspection as required;
- The Lindsay WPCP treated a total of 5,224,062 m^3 of raw sewage influent in 2024;
- ECA 7748-AYRL8C beginning January 1, 2020 ending June 28, 2020 and the current ECA 1696-BPLL4R beginning June 29, 2020 requires the Owner to make an assessment of the issues and provide recommendations on pro-active actions if the Annual Average Daily Flow reaches 80% of the Rated Capacity. The Annual Average Daily Flow in 2024 was 14,273 m^3/day 58% of the Rated Capacity of 24,500 m^3/day;
- Treated effluent loadings and concentrations for $CBOD_5$, total suspended solids (TSS), total phosphorus and pH were under the allowable receiving stream discharge criteria as set by the ECA No.: 6145-AJDQ9K (issued June 5, 2017) and current ECA No.: 1696-BPLL4R during 2024:
- Quarterly treated effluent samples were collected on January 4, April 4, July 4, and October 3, 2024 for analysis of acute lethality to rainbow trout and *Daphnia magna*. All sample results returned a 0% mortality rate with the exception of a 6.7% mortality rate for Daphnia Magna during the October 3rd monitoring event and 3.3% mortality and immobility rate for Daphnia Magna on January 4th. These low level and inconsistent rates have also been observed in the past;
- The treated effluent monthly *E.coli* Geometric Mean Density met the allowable effluent discharge criteria of 175 CFU per 100 mL during 2024;
- The total volume of sludge generated in 2024 was 101,748 m^3;
- There was no sludge removed from the Site in 2024; and
- In 2024, there were no bypass or overflow events at the Site.

6.0 CONCLUSIONS

The general conclusions of the 2024 Annual Report for the Lindsay-Ops Landfill Site are provided below.

6.1 Environmental Monitoring

6.1.1 Ground Water and Leachate

- The landfill is not creating an offsite impact and meets reasonable use criteria

- Monitoring of ground water and leachate in 2024 was carried out in accordance with the requirements of the ECA with the exception of some ground and surface water locations which are seasonally dry;

- The conceptual ground water flow regime at the old landfill site is vertically downward flow through the till overburden to the upper bedrock aquifer. The bedrock aquifer flows laterally toward the Scugog River;

- The old landfill has a limited "halo" effective in the overburden soils given the age of the facility. However, this lateral extent is limited given the low permeability of the overburden till soils;

- The landfill expansion is a lined site where the water levels within the waste cells are kept to a minimum using a leachate collection system. Vibrating wire transducer data confirms leachate collection system is continuing to operate effectively. Based on the Site hydraulics there is little opportunity for contaminant migration away from the landfill expansion area;

- The vertical ground water flow estimate through the overburden till under the old landfill to the upper bedrock was estimated to be about 0.8 m/a which indicate that the vertical flow through the overburden till sediments to the bedrock took about 10 years to occur. The impact to the bedrock aquifer is minor and does not create an off-site impact;

- The lateral flow in the bedrock aquifer is much faster than the vertical percolation through the overburden till (*i.e.,* 100 to 1,000 m/a). As a result, the overburden till contaminant flux has limited effect on the bedrock aquifer. The bedrock aquifer is currently in a steady state condition. This occurs because the rate of flow in the bedrock is sufficiently large enough to attenuate the overburden contaminant flux such that an equilibrium state is established in the bedrock flow field. This equilibrium condition has existed for decades based on the bedrock aquifer monitoring program and will persist into the future until the leachate contaminant flux through the overburden till is completely depleted;

- The contaminant loading calculations indicate that the mass flux in the bedrock aquifer is at least an order of magnitude below the permissible limit in the ECA. Since the contaminant plume has been in a steady state condition for over a decade, this loading will not change over time;

- Given the rate of ground water flow in the bedrock aquifer, it is expected that a steady state contaminant plume extends to the new monitoring wells nests being: 62-17, 61-17 and 61-10; however unlikely to be further such that there is no offsite impact;

- Trigger monitoring in 2024 did not indicate exceedance for any applicable trigger concentration; and

- The leachate strength under the old landfill is stronger than that observed at the perimeter/ periphery. It is that the slow percolation through the waste mass accounts in part for this stronger leachate at depth. This is considered to account for the quality differences that exist between the leachate monitors situated at the base of the waste fill and the leachate collection system encircling the perimeter. Liquids captured by the leachate collection system have not had as long a residence time in the landfill and also represent a composite of younger and older waters.

6.1.2 Surface Water

The surface water monitoring program focuses on two systems. The first is the surface water flow system in the Scugog River passing by the Site. The other is considered to be the on-Site drainage network.

Scugog River

- In the Scugog River, parameter concentrations between the upstream and the downstream are generally similar. Therefore, the Site has no environmental impact to the surface water that can be readily sourced to the landfill;

- The ground water contribution to the Embayment A is estimated to be ~100,000 m^3/year. The outflow from the WPCP was ~5,174,898 m^3 in 2023 (i.e., ~0.1 m^3/s). The flow in the Trent-Severn system must exceed 17 m^3/s at Lakeview to maintain a base flow at Trenton, which infers a significant flow from Sturgeon Lake. As a result, and despite the concentration differences, the flow from Embayment A is considered to be insufficient to meaningfully influence the Scugog River;

On-Site Drainage System

- Flow in the drainage system is seasonal. Flow commences with the spring freshet and is typically exhausted by June / July;

- Weekly flow monitoring in 2019 and 2021 of the south drainage channel estimated that between ~5,000 m^3 (2023) & 30,000 m^3 (2019) flowed in this channel before it dries out in the summer. The same weekly flow monitoring in the north drainage channel estimated that ~150,000 m^3 (2021) and 400,000 m^3 (2019) flowed in this channel before it dried up in the summer.

- The magnitude of these flows, although variable, is insufficient to influence the Scugog River with the current contaminant levels. Furthermore, when the drainage ditch flow subsides in the summer season, there is no contaminant contribution to the Scugog River;

- The overburden till is not conducive to providing a base flow condition in the drainage ditch system(s). The soil permeability does not allow substantial flow and the hydraulic gradient in the overburden is vertical down;

- The natural condition of the overburden soils will also not facilitate significant infiltration during excess water conditions and thus promotes overland flow to the drainage ditch system;

- The parameter differences highlighted in the drainage ditches differ from those seen in the Scugog River. The flow in the south drainage channel is ~0.1-1% of that discharged by the WPCP. Similarly, flow from the north drainage channel is ~3-10% of that discharged by the WPCP. Parameter concentrations in the south drainage channel would need to be orders of magnitude larger to affect any influence. Furthermore, there is no defined or consistent seasonal "shift" in the Embayment A water that would be anticipated if being influenced by the drainage channels since the drainage channels dry out in July and don't contribute until the following spring freshet;

- Concerns of contaminant flow into Embayment A are unfounded since there is no substantial flow during these dry weather samples. In the absence of flow, there cannot be contaminant migration. Thus, the stagnant samples with an elevated chemical signature have no meaningful influence on the on-Site surface water flow system; especially as it pertains to impacts on the Scugog River;

- Seepage from the lagoon system is not influencing the south drainage water quality;

- The organic sampling in surface waters regardless of where these samples are collected are not yielding significant results. Both VOC and PCB sampling at surface water sampling stations are unnecessary and can be excluded from the monitoring program;

6.1.3 Landfill Gas

The landfill gas monitoring program is designed to evaluate the migration potential of these compounds in the environment.

- The landfill gas sampling results in 2024 are consistent with the previous years;

- Landfill gas concentrations exceeding the Lower Explosive Limit (LEL) of 5% (by volume) are seen at the leachate monitoring wells;

- Landfill gas concentrations are also routinely detected at two downgradient perimeter wells being 16-91 and 12-91 on the west side of the old landfill, although the concentrations at 12-91 are more typically trace or non-detect. This location did not show detection the past three years. Consistent detection at 16-91 is anticipated given the monitor's proximity to the landfill edge. However, these results were not considered important in terms of off-Site migration;

- The landfill gas monitoring program indicates that methane gas from the landfill is not migrating off Site. The remaining landfill gas monitoring locations indicated insignificant methane levels;

- If the landfill gas sampling program which has been run for years yields the same results and indicates there is a negligible chance for off-Site migration then there may be little need to continue to monitor this system or at a minimum reduce the frequency of the program;

6.1.4 Biomonitoring

The results indicated that three of four sampling events (April, June & October) indicated a 0% impairment and mortality rate for both Rainbow Trout and *Daphnia magna*, while the August event indicated a mortality rate of 20% for rainbow trout and 3.3% for *Daphnia magna.* It is noted that the control sample for Rainbow Trout had a 10% mortality such that the laboratory process could have some influence on the mortality rate. This is the second year for data collection and the only event of the eight completed with a measured mortality. Continued monitoring will help to establish potential trends or whether the August results were anomolous.

6.2 Wetland Assessment

The wetland assessment is completed on a five-year frequency and was updated by Azimuth in 2023.

- The findings of this assessment and overall determination that the influence observed at the monitoring locations is not attributable to the landfill, consideration should be given to discontinue this monitoring program;

6.3 Site Operations

The Conditions associated with the landfill operations are to ensure the facility is being properly operated. The City of Kawartha Lake is diligent in their operations and protocols.

- The Site is being operated well and has no significant problems. No complaints were received in 2024 regarding any significant operational issues at the Site. Overall, operational protocols are effective in remaining attentive to the Site requirements, which are addressed as identified;

- The amount of waste material (including soil received, segregated, stockpiled and used for daily cover) disposed in the landfill in 2024 was 31,997 tonnes, which is comparable to previous years;

- Gull control measures continued to be used in 2024, including pyrotechnics as historically outsourced methods were not proving effective. These methods proved effective and will be continued in 2025;

- The total recorded volume of leachate and sewage (combined) pumped from the landfill to the Lindsay WPCP in 2024 was approximately 76,500 m^3. This total leachate pumping volume consists of 12,799 m^3 from Leachate Pumping Station No. 1 (Old Landfill) and 63,701m^3 from Leachate Pumping Station No. 2 (North Expansion Area), which is above last years value of ~51,000 m^3, and approximately double the previous three year range of ~26,000 to 31,000 m^3. This could be the result of the expansion of the waste area further south over the past two years and a larger working area;

- The average daily flow volume of leachate pumped to the WPCP from the Lindsay Ops Landfill for each month of 2024 only exceeded in February and April the maximum allowable average daily flow of 300 m^3/day specified in the ECA. These exceedances were likely more related to increased inputs resulting from snow melt events. The peak permissible flow rate is set at 750 m^3/day (8.7 L/s) at any time for the combined pump station contributions to the WPCP. The instantaneous rate measured at each location was not exceeded in 2024 at either LPS No. 1 or No.2;

- Construction of the eastern portion of Cells 4 and 5 were completed in 2019 such that filling in 2024 was in the north half of these cells;

6.4 Public Consultation

The Public Review Committee (PRC) continued its activities and mandate in 2024. In 2024, six meetings of the PRC were held.

7.0 RECOMMENDATIONS

The following are the recommendations of the 2024 Annual Report for the Lindsay-Ops Landfill Site:

7.1 Environmental Monitoring

7.1.1 Ground Water / Leachate

The environmental monitoring program is to evaluate the key contaminant flow pathways that exist at the Site.

- The sampling for organic priority pollutants has not detected a significant contaminant threat in the decades this program has been conducted:
    - PCBs are considered immobile in the environment. Decades of sampling have not yielded significant results. PCBs were banned from use in 1977. Further evaluation for this parameter is unwarranted. A few key monitoring wells (*i.e.,* 20-91-III, 23-91-III, 25-96 & 61-10-I) detecting the leachate influence in the bedrock flow system should be sampled infrequently (*i.e.,* once every three to five years);
    - Decades of sampling for VOC's have not yielded significant results. BTEX concentrations have degraded over time to trace or non-detectable levels. Only limited trace detections were observed at a few monitoring wells in 2024 beyond those at 7-90-II. Given the limited and inconsistent detections over the period of record, further evaluation for these parameters is unwarranted.
- The five primary historical indicator parameters used in the landfill evaluation are not considered to be the best parameters for this assessment. Therefore, the following recommendations are:
    - Discontinue BTEX monitoring since, the BTEX signature in the ground water environment has degraded over time;

- Discontinue phenols monitoring since, the phenols concentrations tend not be consistently detected and appear to have degraded over time;
- Discontinue phosphorus monitoring since the phosphorus concentrations tended not to be consistently detected such that they can be relied upon to monitor trends.
- Continue using chloride and total ammonia parameters in assessment as they are considered to be appropriate for the performance monitoring program;
- Continue using other parameters (*i.e.,* sulphate, iron, DOC) in assessment as suggested in Section 2.1.3.1;

- Decades of quarterly water quality monitoring results have suggested that changes at the landfill site occurs slowly and the landfill is now stable. The system is considered to be in a steady state equilibrium. The contaminant flux toward the Scugog River is an order of magnitude below any level of concern.

  - A quarterly ground water monitoring program would appear excessive under these conditions and semi-annual monitoring (or less) should be considered, including water level measurements;
  - The existing database could be used to establish normal steady state conditions or slow trending conditions at targeted monitoring locations. This could permit less frequent sampling under a specified condition based on the past year or more of sampling. Similarly, a perceived departure from the norm could necessitate a return to the quarterly to confirm the trend or refute the anomalous data;

- Eliminate PCB's, radionuclides, pesticides and VOCs (or at least reduced frequency) in leachate samples owing to a lack of detections;

- Reduce frequency of leachate collection system inspection and flushing to every three years, or as required based on operational requirements

7.1.2 Surface Water

The surface water monitoring program is to assess any influence the Site may have on the adjacent Scugog River. The monitoring program is also intended to detect contaminant migration via the Site drainage channel network.

- the sampling for organic priority pollutants has not detected a significant contaminant threat in the decades this program has been conducted:

- Decades of sampling have not yielded significant PCB results. Further evaluation for PCBs is unwarranted;

- Decades of sampling have not yielded significant VOC results.
  - BTEX concentrations have degraded over time to trace or non-detectable levels. Further evaluation for this parameter would appear unwarranted;

  - trihalomethanes is a by-product of WPCP processing and therefore need not be assessed as it does not relate to the landfill;

- the Scugog River sampling program is recommended for the inorganic suite of parameters currently being used;

- The nearshore samples collected from 2019 to 2024 have yielded results that indicate generally consistent results for iron and ammonia between the inlets and Embayment B sampling point at the opening to river. This would indicate that seepage of the lagoons into these inlets is negligible and not creating a measurable influence in the embayment / river. As such, it is recommended that the nearshore samples be removed from the monitoring program. These were not included in the most recent ECA amendment such that no formal changes to the monitoring program or ECA are required to enact this change;

- The on-Site drainage sampling program is recommended for the inorganic suite of parameters currently being used;

7.1.3 Landfill Gas

The landfill gas monitoring program is design to evaluate the migration potential of these compounds in the environment.

- The findings from the landfill gas monitoring suggest that there is no meaningful gas migration at this Site. A monitoring program needs to be maintained as a safeguard; but should reflect the relative risk given the current understanding;

  - It is proposed that if monitoring wells have not shown any detection in the past five years, then sampling should be reduced to an annual late winter measurement;
  - If a detection occurs during the annual monitoring, then quarterly sampling should be re-established or if source concentrations increase abruptly by more than 25%;

- If a monitoring well has shown no detection for a decade, then monitoring should be terminated;

It is noted that all of these monitoring requirements are specifically identified in the ECA, such that any revisions to the monitoring program would require an amendment to the ECA.

7.2 Wetland Assessment

Given the findings of the assessment completed in 2023, the overall determination is that the influence observed at the monitoring locations is not attributable to the landfill. As such, consideration should be given to discontinue this monitoring program

7.3 Site Operation

The Conditions associated with the landfill operations are to ensure the facility is being operated according to Site specifications outlined by the MECP.

- The City of Kawartha Lakes has been issued a new ECA license and there are new conditions for Site operations;
    - The peak maximum flow of 750 m^3/day (at any time) for leachate transfer to the WPCP appears to be anomalously low if related to the peak instantaneous flows which have historically occurred based on the past operating data and typically related to spring melt.

7.4 Public Consultation

No new recommendations.

8.0 REFERENCES

Azimuth Environmental Consulting Inc. 2024
2023 Annual Monitoring Report:
Lindsay-Ops Landfill, City of Kawartha Lakes

Azimuth Environmental Consulting Inc. 2023
2022 Annual Monitoring Report:
Lindsay-Ops Landfill, City of Kawartha Lakes

Azimuth Environmental Consulting Inc. 2022
2023 Annual Monitoring Report:
Lindsay-Ops Landfill, City of Kawartha Lakes

Azimuth Environmental Consulting Inc. 2023
2020 Annual Monitoring Report:
Lindsay-Ops Landfill, City of Kawartha Lakes

Azimuth Environmental Consulting Inc. 2020
2019 Annual Monitoring Report:
Lindsay-Ops Landfill, City of Kawartha Lakes

Azimuth Environmental Consulting Inc. 2012
Performance Monitoring Program Efficiency Evaluation
Lindsay-Ops Landfill, City of Kawartha Lakes

Cambium Inc. 2020
2020 Biomonitoring Report:
Lindsay-Ops Landfill, City of Kawartha Lakes

Cambium Inc. 2019
2019 Biomonitoring Report:
Lindsay-Ops Landfill, City of Kawartha Lakes

City of Kawartha Lakes, 2008
Landfill Gas Capture Funding Program – City of Kawartha Lakes Lindsay Ops Landfill Site
Correspondence to the Landfill Gas Capture Program,
Waste Management Policy Branch, Ministry of the Environment, dated November 7, 2008

Freeze, A.R. & Cherry, J.A., 1979
Groundwater
Prentice Hall

Golder Associates Ltd, 1996
Landfill Assessment and Wetland Impact Study
Golder Report No. 951-1582

Golder Associates Ltd, 1998
Estimation of Ammonia-N Loadings Due to Leakage from the Sewage Lagoon System, Lindsay-Ops Landfill Site
Golder Report No. 981-1494

Golder Associates Ltd, 2000
Hydrogeological Conditions and Assessment of Ammonia Loadings – Proposed Lindsay-Ops Landfill Expansion
Golder Report No. 991-1353-3

Golder Associates Ltd, 2005
Monitoring Plan for Compost Pad Facility Lindsay-Ops Landfill, prepared for City of Kawartha Lakes
Correspondence to Mr. I. Parrot, Ministry of the Environment Assessment and Approvals Branch, dated February 9, 2005

Golder Associates Ltd, 2008a
Landfill Gas Utilization Assessment, Lindsay/Ops Landfill, City of Kawartha Lakes, ON
Correspondence to Mr. A. Boyd, Solid Waste Services, City of Kawartha Lakes, dated September 25, 2008

Golder Associates Ltd, 2008b
Application for Funding of LFG Capture Facilities, Lindsay/Ops Landfill, City of Kawatha Lakes, Ontario
Correspondence to Mr. A. Boyd, Solid Waste Services, City of Kawartha Lakes, dated November 6, 2008

Golder Associates Ltd, 2011
Ammonia-N Trigger Concentration Exceedance, Lagoon Monitoring Wells, Lindsay Water Pollution Control Plant, City of Kawartha Lakes

Correspondence to Ms. Cathy Curlew, Ministry of the Environment, Peterborough District Office, dated September 16, 2011

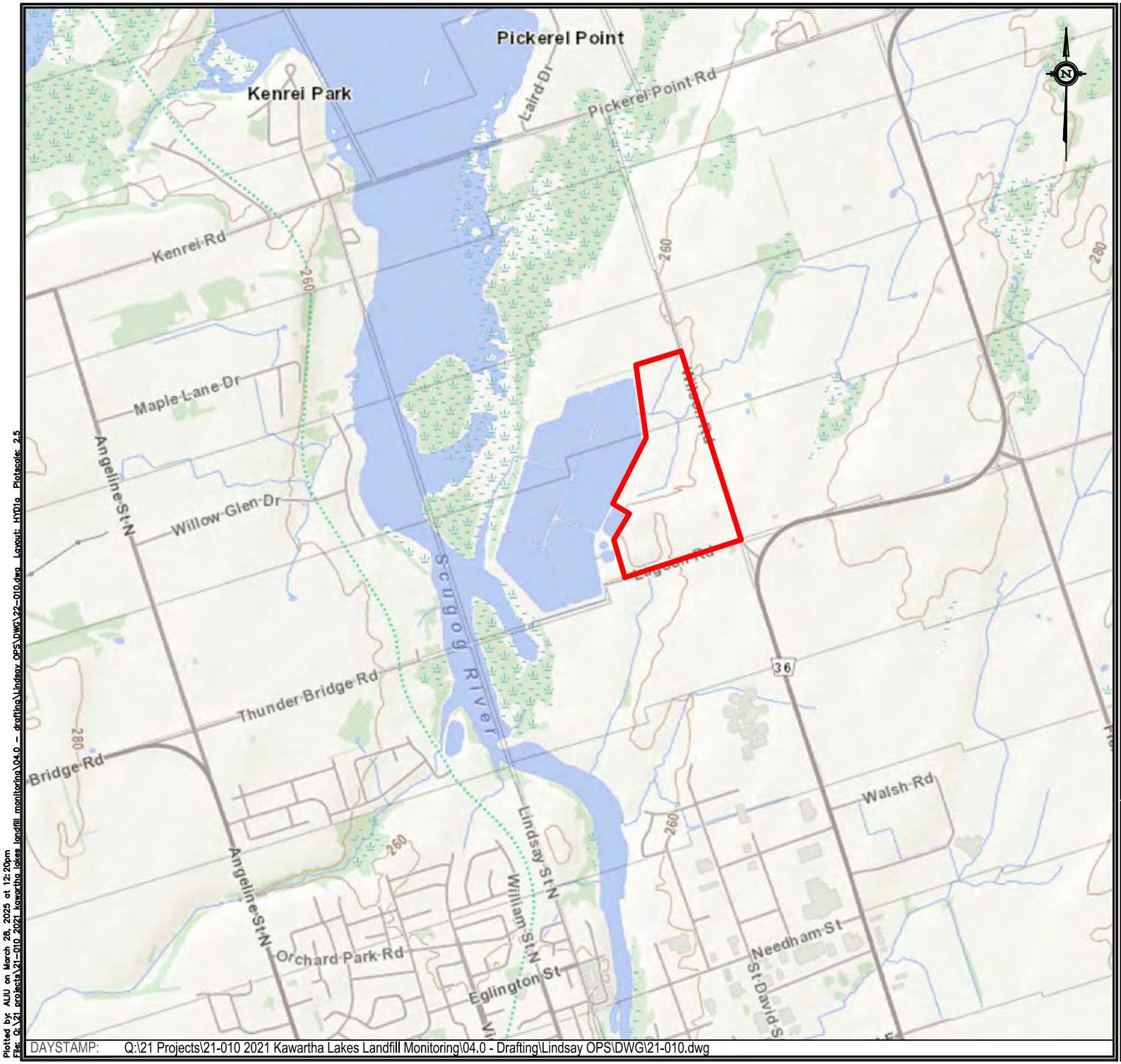
Hydroterra Limited, 1991
Interim Landfill Expansion Study

Hydroterra Limited, 1993
Supplementary Report

Urban & Environmental Management Inc., 2012
Consolidated Maintenance and Operations Report

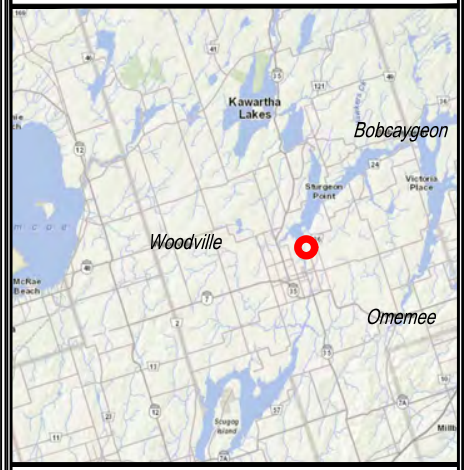
WESA, 2014
Lindsay-Ops Waste Disposal Site (ECA # A323504) 2013 Annual Status Report

Figures



LEGEND:

Approx. Property Boundary



REG MAP

250m 0 750m

HORIZONTAL SCALE 1:25,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

Lindsay OPS Landfill,
Lindsay, ON

DATE ISSUED: *March 2025*	Figure No.
CREATED BY: *JLM*	1a
PROJECT NO.: *25-010*	
REFERENCE: *MNRF*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

Plotted by: ALU on March 28, 2025 at 12:20pm
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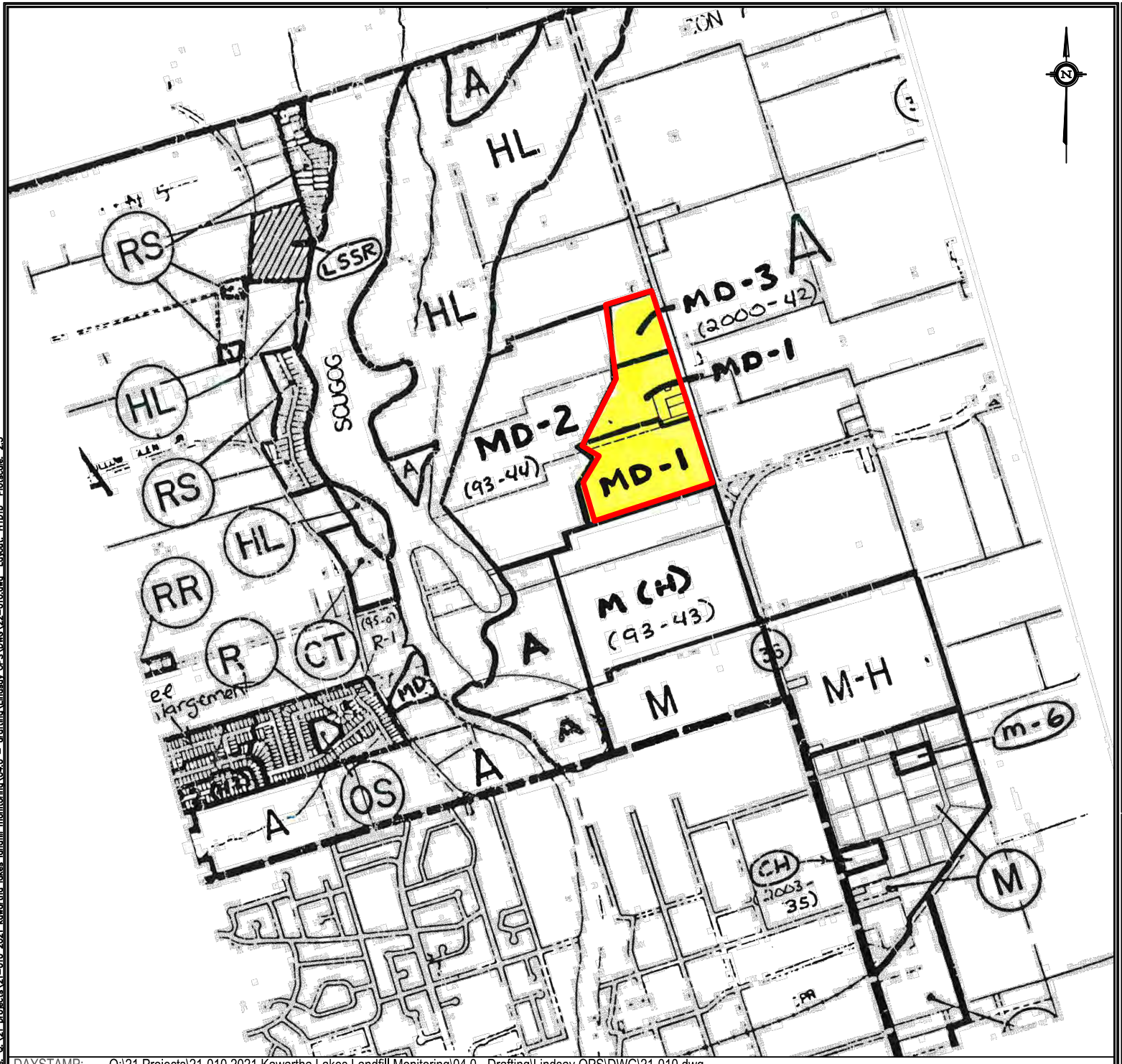

LEGEND:

Approx. Property Boundary

A -Agricultural Zone
CH -Highway Commercial Zone
CT -Tourist Commercial Zone
HL -Hazard Lands
M -General Industrial Zone
MD-1 -Disposal Industrial Exception One Zone
MD-2 -Disposal Industrial Exception Two Zone
MD-3 -Disposal Industrial Exception Three Zone
M(H) -General Industrial Zone with A Holding
M-H -General Industrial Zone with A Holding
M-6 -General Industrial Exception Six Zone
OS -Open Space Zone
R -Residential Zone
RS -Shoreline Residential Zone
RR -Rural Residential Zone

250m 0 750m

HORIZONTAL SCALE 1:25,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Zoning Map

Lindsay OPS Landfill,
Lindsay, ON

DATE ISSUED: *March 2025*	Figure No.
CREATED BY: *JLM*	1b
PROJECT NO.: *25-010*	
REFERENCE: *MNRF*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

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LEGEND:

- Approx. Property Boundary
- Limit of Old Landfill
- Limit of Landfill Expansion Area
- Leachate Collector
- Fence
- Overburden Well Locations
- Refuse Well Locations
- Bedrock Well Locations
- Vibrating Wire Piezometer Installed on Surface of Geomembrane Liner
- Manhole

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Ground Water Monitoring Network

Lindsay OPS Landfill, Lindsay, ON

DATE ISSUED:	March 2025	Figure No. 2a
CREATED BY:	JLM	
PROJECT NO.:	25-010	
REFERENCE:	First Base Solutions	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

Plotted by: AUU on March 28, 2025 at 12:20pm
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LEGEND:

- *Approx. Property Boundary*
- *Limit of Old Landfill*
- *Limit of Landfill Expansion Area*
- *Leachate Collector*
- *Fence*

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Stormwater and Leachate Collection System Layout

Lindsay OPS Landfill, Lindsay, ON

DATE ISSUED:	*March 2025*	Figure No. 2b
CREATED BY:	*JLM*	
PROJECT NO.:	*25-010*	
REFERENCE:	*First Base Solutions*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

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LEGEND:

- *Approx. Property Boundary*
- *Limit of Old Landfill*
- *Limit of Landfill Expansion Area*
- *Leachate Collector*
- *Fence*
- *Gas Probe Location*
- *Vibrating Wire Piezometer Installed on Surface of Geomembrane Liner*
- *Manhole*

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Gas Monitoring Locations

Lindsay OPS Landfill, Lindsay, ON

DATE ISSUED:	*March 2025*	Figure No. 2a
CREATED BY:	*JLM*	
PROJECT NO.:	*25-010*	
REFERENCE:	*First Base Solutions*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

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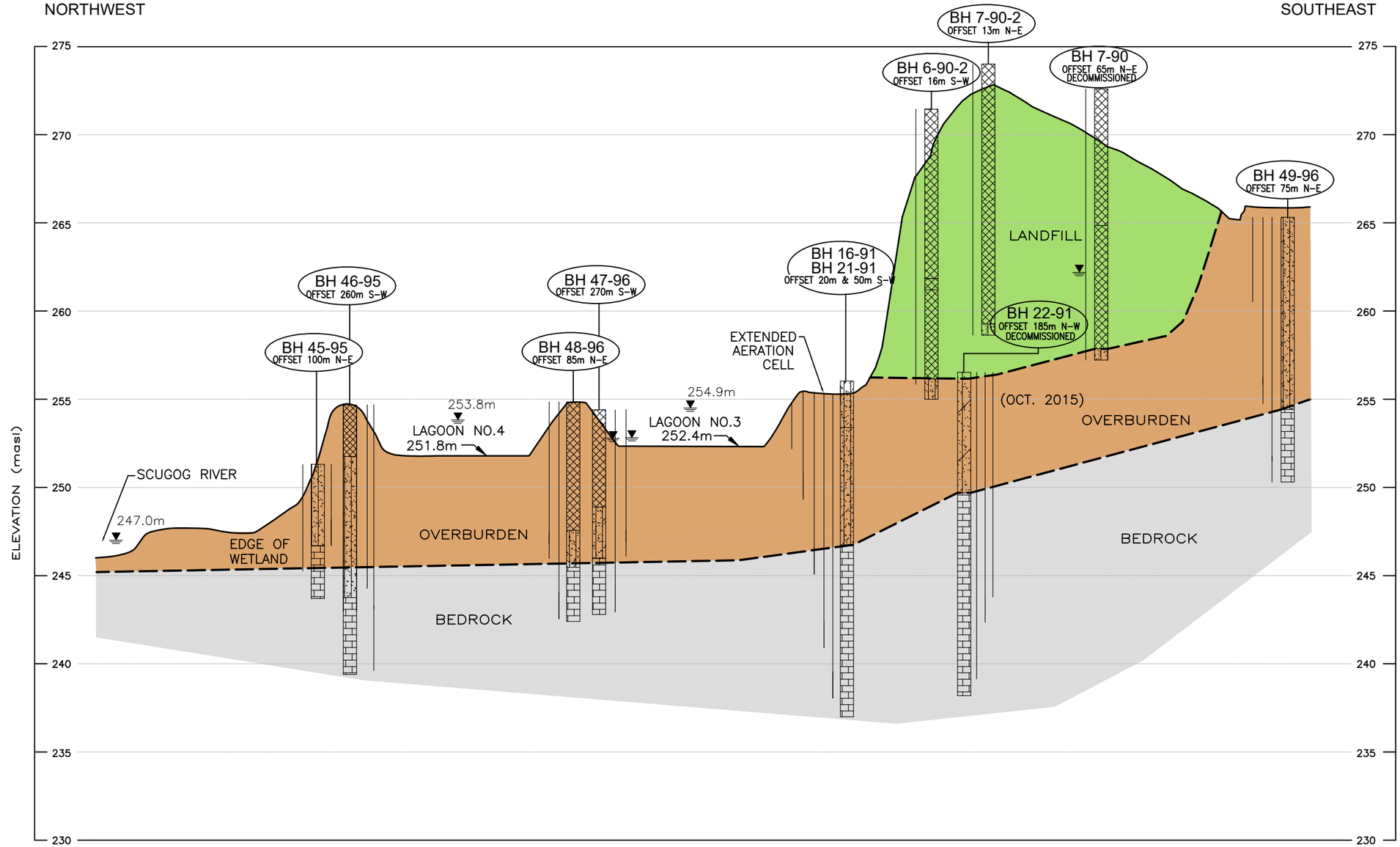
A
NORTHWEST

A'
SOUTHEAST



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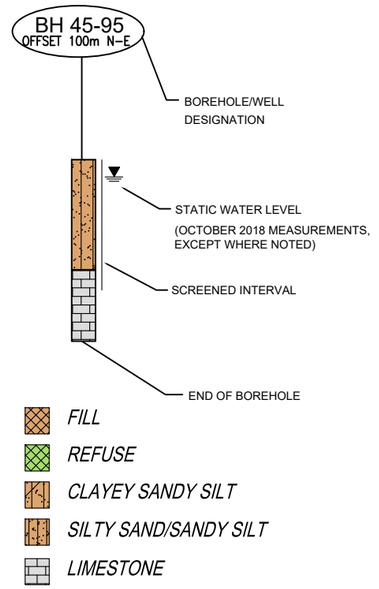

REFERENCE:

1. MAP BASED ON FIGURE 3 TITLED "SURFACE WATER FEATURES" FROM REPORT NO. GLL 99-521, "FENELON LANDFILL SITE - DESIGN AND OPERATIONS REPORT", DATED MARCH 2000, BY GARTNER LEE LTD.
2. CONTOURS FOR THE ACTIVE FILL AREA UPDATED TO REFLECT 2012 LANDFILL SURFACE CONTOURS PROVIDED BY THE CITY OF KAWARTHA LAKES, SURVEYED BY COE, FISHER, CAMERON DATED DECEMBER 4, 2012.
3. SOURCE: GOLDER, 2019

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Cross Section A-A'

Lindsay OPS Landfill,
Lindsay, ON

DATE ISSUED:	*March 2025*	Figure No.
CREATED BY:	*JLM*	3
PROJECT NO.:	*25-010*	
REFERENCE:	*First Base Solutions*	

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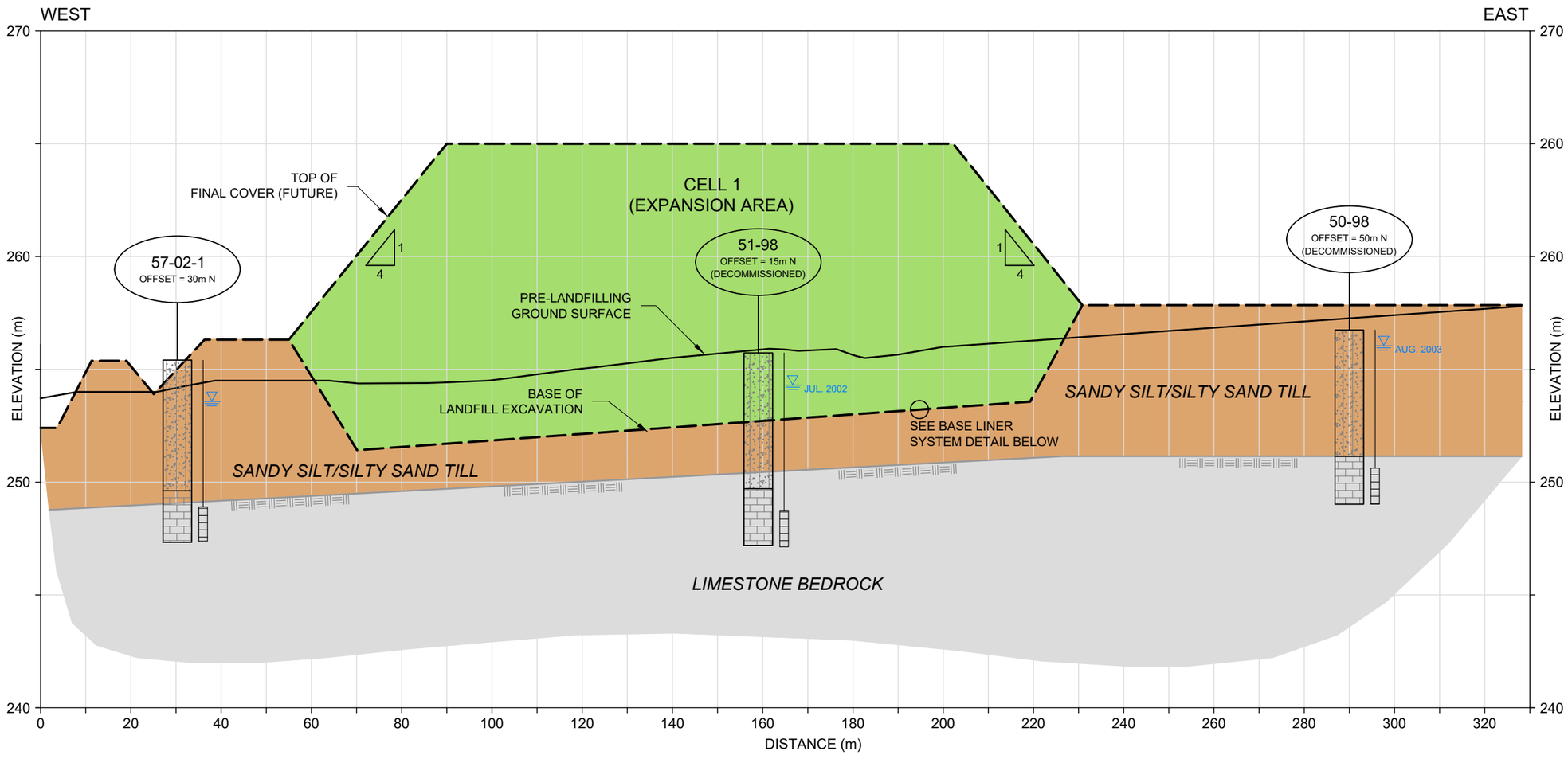

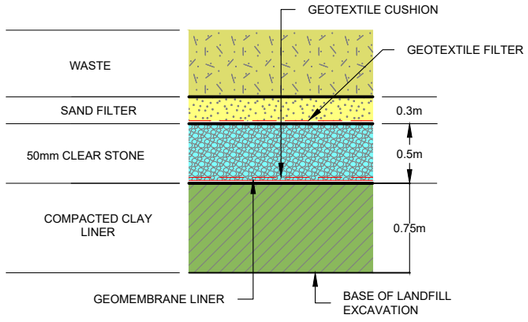

BASE LINER SYSTEM

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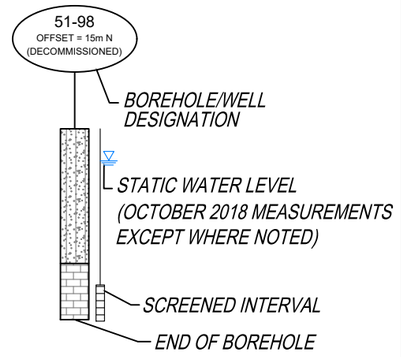

NOTES:

1. GROUND AND BASE GRADE SURFACES EXTRACTED FROM FILE SH-04.DWG, DRAWING NO. 4, TITLED "GRADING PLAN - CELL 1, BASE EXCAVATION", DATED AUGUST 2002, PRODUCED BY GARTNER LEE LTD. AND PROVIDED BY THE CITY OF KWARTHA LAKES.
2. REFER TO FIGURE 2A FOR LOCATION OF CROSS-SECTION B-B'.
3. SOURCE: GOLDER, 2019

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Cross Section B-B'

Lindsay OPS Landfill,
Lindsay, ON

DATE ISSUED:	March 2025	Figure No. 4
CREATED BY:	JLM	
PROJECT NO.:	25-010	
REFERENCE:	Golder, 2019	

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LEGEND:

- Approx. Property Boundary
- Limit of Old Landfill
- Limit of Landfill Expansion Area
- Leachate Collector
- Fence
- Overburden Well Locations
- Refuse Well Locations
- Bedrock Well Locations
- Inferred Direction of Ground Water Flow
- 293.5 Ground Water Elevation (masl)(October 2024)
- 0.5m Ground Water Contours

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Overburden Ground Water Elevations October 2024

Lindsay OPS Landfill, Lindsay, ON

DATE ISSUED:	March 2025	Figure No. 5
CREATED BY:	JLM	
PROJECT NO.:	25-010	
REFERENCE:	First Base Solutions	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

Plotted by: AUU on April 25, 2025 at 10:14am
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LEGEND:

- Approx. Property Boundary
- Limit of Old Landfill
- Limit of Landfill Expansion Area
- Leachate Collector
- Fence
- Overburden Well Locations
- Refuse Well Locations
- Bedrock Well Locations
- Inferred Direction of Ground Water Flow
- 293.5 Ground Water Elevation (masl)(October 2024)
- 0.5m Ground Water Contours

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Bedrock Ground Water Elevations October 2024

Lindsay OPS Landfill, Lindsay, ON

DATE ISSUED:	March 2025	Figure No. 6
CREATED BY:	JLM	
PROJECT NO.:	25-010	
REFERENCE:	First Base Solutions	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

Plotted by: AUU on April 25, 2025 at 10:14am
File: Q:\21 projects\21-010 2021 kawartha lakes landfill monitoring\04.0 - drafting\Lindsay OPS\DWG\22-010.dwg Layout: HY06 Plotscale: 2.5

Figure 7 - Total Ammonia Concentrations at Upper Bedrock Aquifer Trigger Montioring Wells - Old Landfill Area

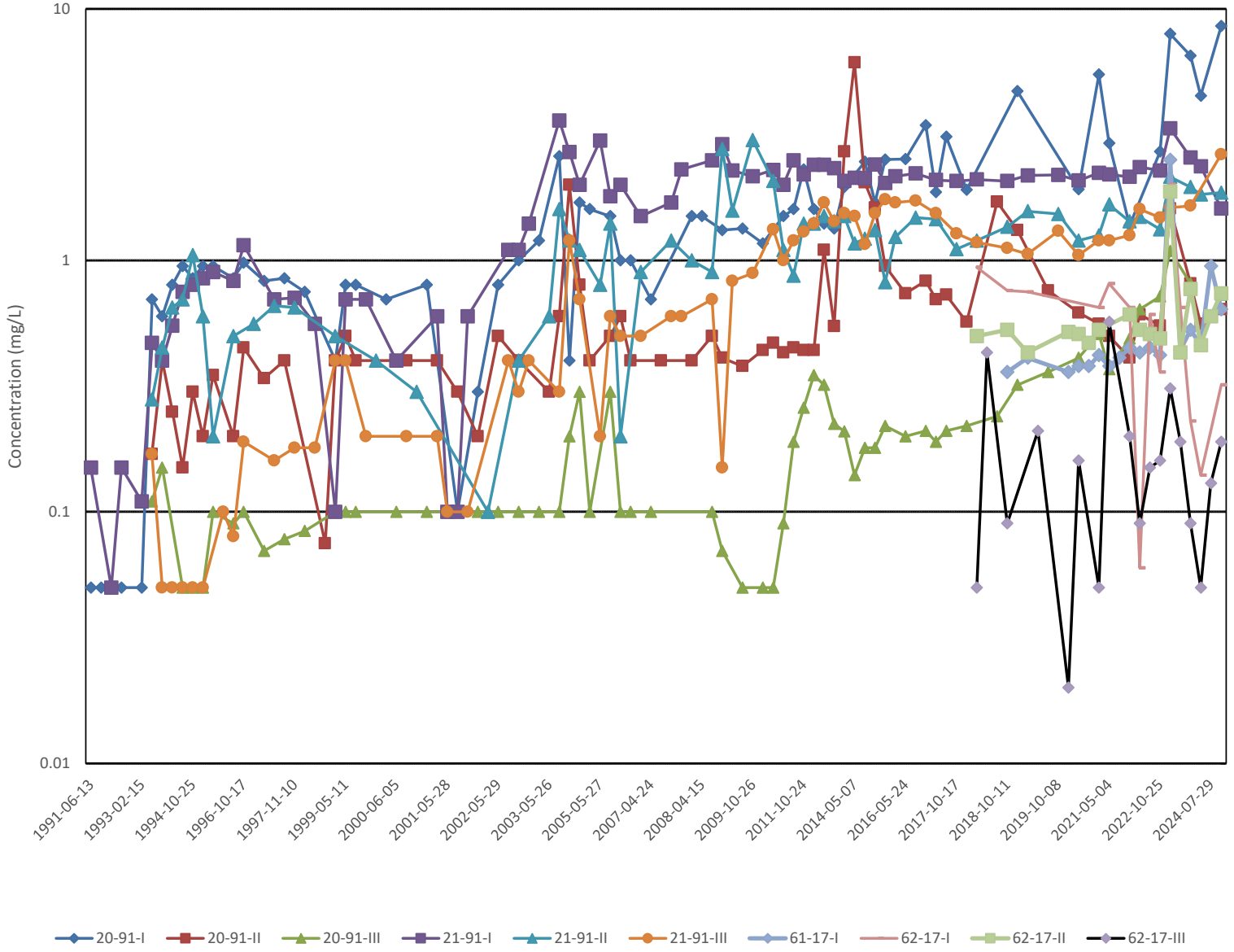
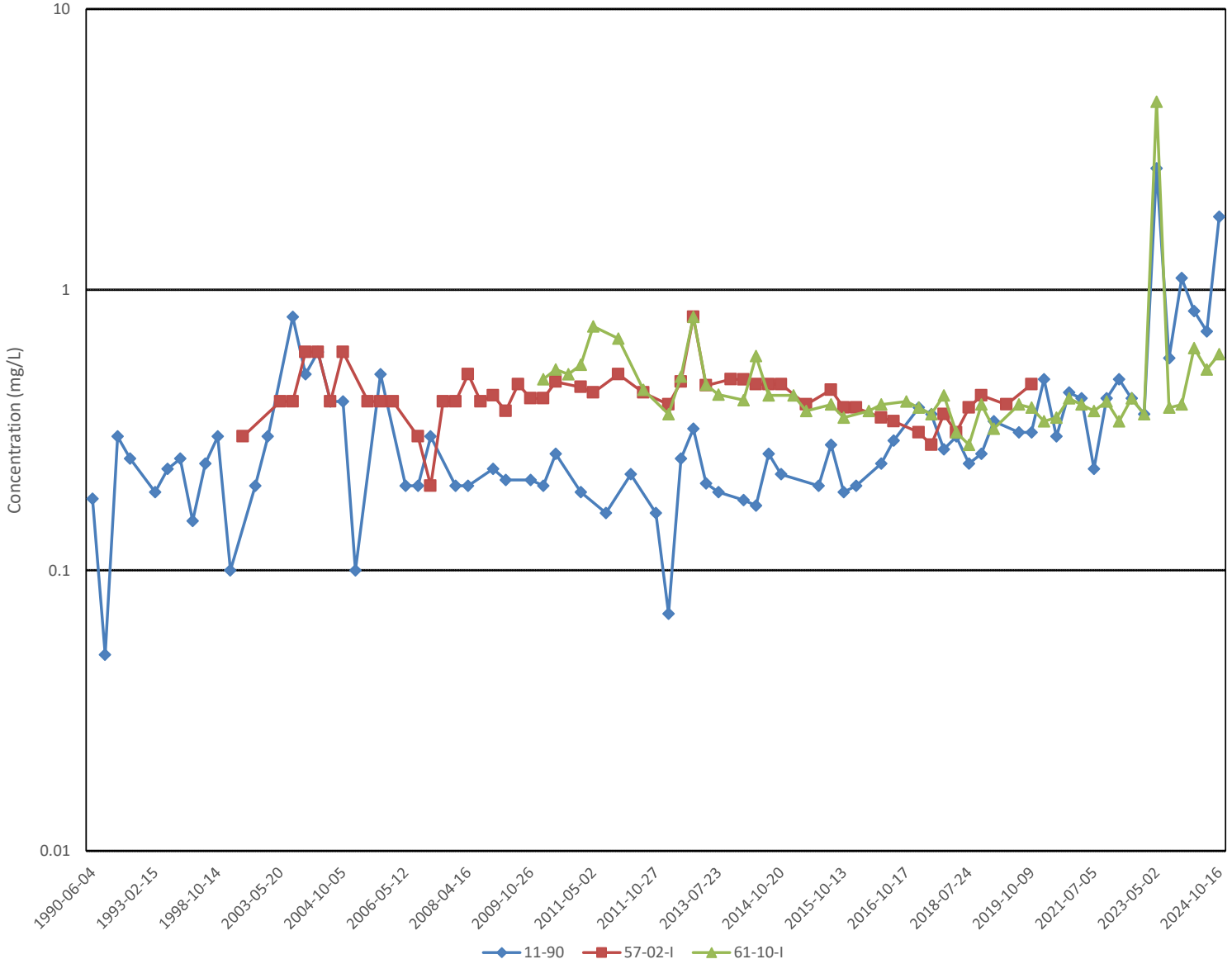


Figure 8 - Total Ammonia Concentrations at Upper Bedrock Aquifer Trigger Montioring Wells - Landfill Expansion Area





LEGEND:

- *Approx. Property Boundary*
- *Limit of Old Landfill*
- *Limit of Landfill Expansion Area*
- *Leachate Collector*
- *Fence*
- *Bedrock Well Locations*
- 168 *Max. Chloride Concentration (mg/L) (2024)*

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Upper Bedrock Chloride Concentrations (2024)

Lindsay OPS Landfill,
Lindsay, ON

DATE ISSUED:	*March 2025*	Figure No. 9a
CREATED BY:	*JLM*	
PROJECT NO.:	*25-010*	
REFERENCE:	*First Base Solutions*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

Plotted by: AUU on April 25, 2025 at 10:14mm
File: Q:\21 projects\21-010 2021 kawartha lakes landfill monitoring\04.0 – drafting\Lindsay OPS\DWG\22–010.dwg Layout: HY09a Plotscale: 2.5



LEGEND:

- *Approx. Property Boundary*
- *Limit of Old Landfill*
- *Limit of Landfill Expansion Area*
- *Leachate Collector*
- *Fence*
- *Bedrock Well Locations*
- *168* *Max. Ammonia Concentration (mg/L)(2024)*

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Upper Bedrock Total Ammonia Concentrations (2024)

Lindsay OPS Landfill, Lindsay, ON

DATE ISSUED:	*March 2025*	Figure No. 9b
CREATED BY:	*JLM*	
PROJECT NO.:	*25-010*	
REFERENCE:	*First Base Solutions*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

Plotted by: AUU on April 25, 2025 at 10:14mm
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LEGEND:

- *Approx. Property Boundary*
- *Limit of Old Landfill*
- *Limit of Landfill Expansion Area*
- *Leachate Collector*
- *Fence*
- *Bedrock Well Locations*
- *<0.1* *Max. Phosphorus Concentration (mg/L) (2024)*

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Upperd Bedrock Phosphorous Concentrations (2024)

Lindsay OPS Landfill,
Lindsay, ON

DATE ISSUED:	*March 2025*	Figure No. 9c
CREATED BY:	*JLM*	
PROJECT NO.:	*25-010*	
REFERENCE:	*First Base Solutions*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

Plotted by: AUU on April 25, 2025 at 10:14mm
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LEGEND:

- *Approx. Property Boundary*
- *Limit of Old Landfill*
- *Limit of Landfill Expansion Area*
- *Leachate Collector*
- *Fence*
- *Bedrock Well Locations*
- 168 *Max. Toluene Concentration (µg/L)(2024)*

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Upper Bedrock Toluene Concentrations (2024)

Lindsay OPS Landfill, Lindsay, ON

DATE ISSUED:	*March 2025*	Figure No. 9d
CREATED BY:	*JLM*	
PROJECT NO.:	*25-010*	
REFERENCE:	*First Base Solutions*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

Plotted by: AJU on April 25, 2025 at 10:14mm
File: Q:\21 projects\21-010 2021 kawartha lakes landfill monitoring\04.0 – drafting\Lindsay OPS\DWG\22-010.dwg Layout: HY09a Plotscale: 2.5



LEGEND:

- *Approx. Property Boundary*
- *Limit of Old Landfill*
- *Limit of Landfill Expansion Area*
- *Leachate Collector*
- *Fence*
- *Bedrock Well Locations*
- 168 *Max. Phenols Concentration (mg/L)(2024)*

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Upper Bedrock Phenols Concentrations (2024)

Lindsay OPS Landfill, Lindsay, ON

DATE ISSUED:	*March 2025*	Figure No. 9e
CREATED BY:	*JLM*	
PROJECT NO.:	*25-010*	
REFERENCE:	*First Base Solutions*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

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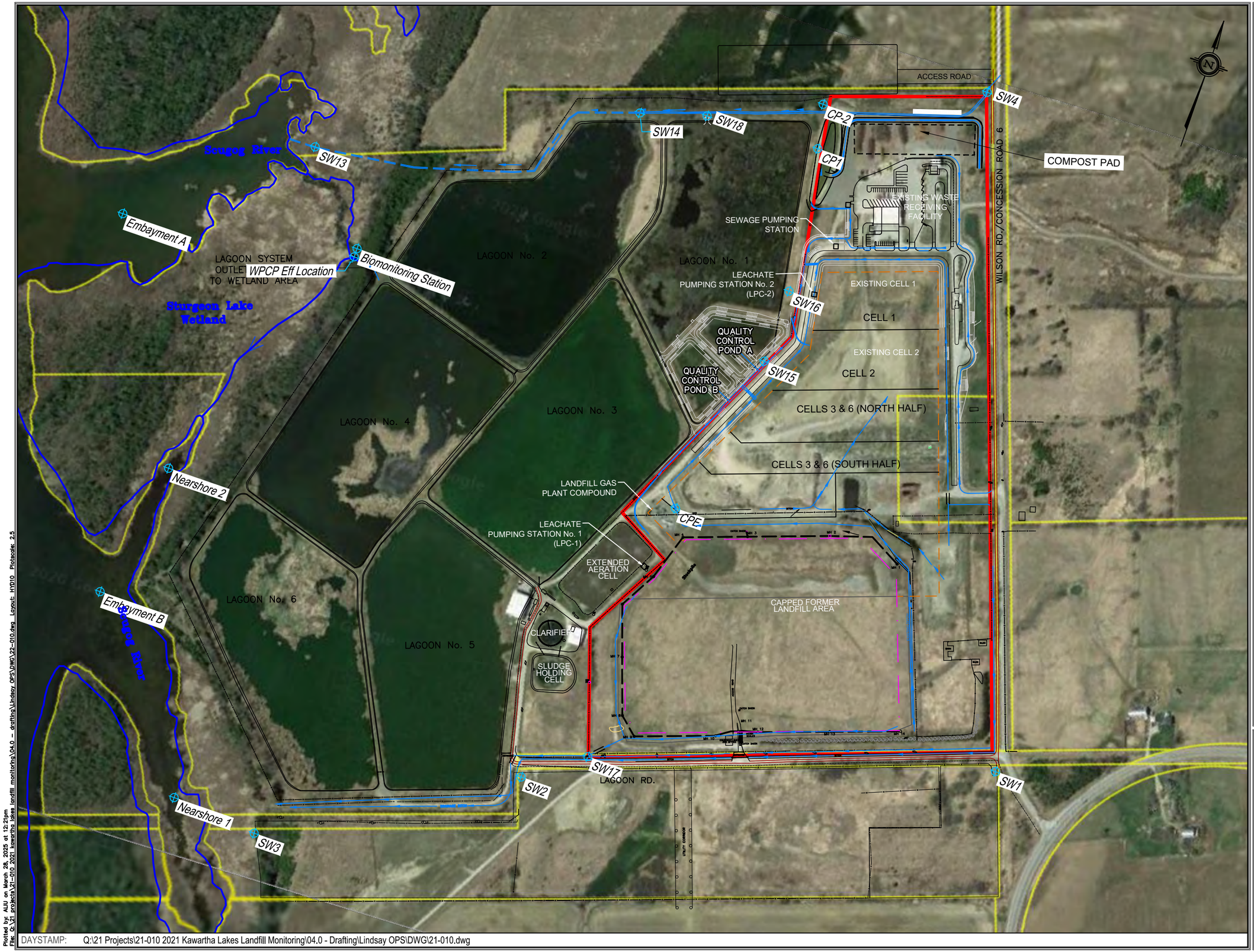

LEGEND:

- *Approx. Property Boundary*
- *Limit of Old Landfill*
- *Limit of Landfill Expansion Area*
- *Leachate Collector*
- *Fence*
- *Surface Water Monitoring Locations*

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Surface Water Monitoring Network

Lindsay OPS Landfill, Lindsay, ON

DATE ISSUED:	*March 2025*	Figure No. 10
CREATED BY:	*JLM*	
PROJECT NO.:	*25-010*	
REFERENCE:	*First Base Solutions*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

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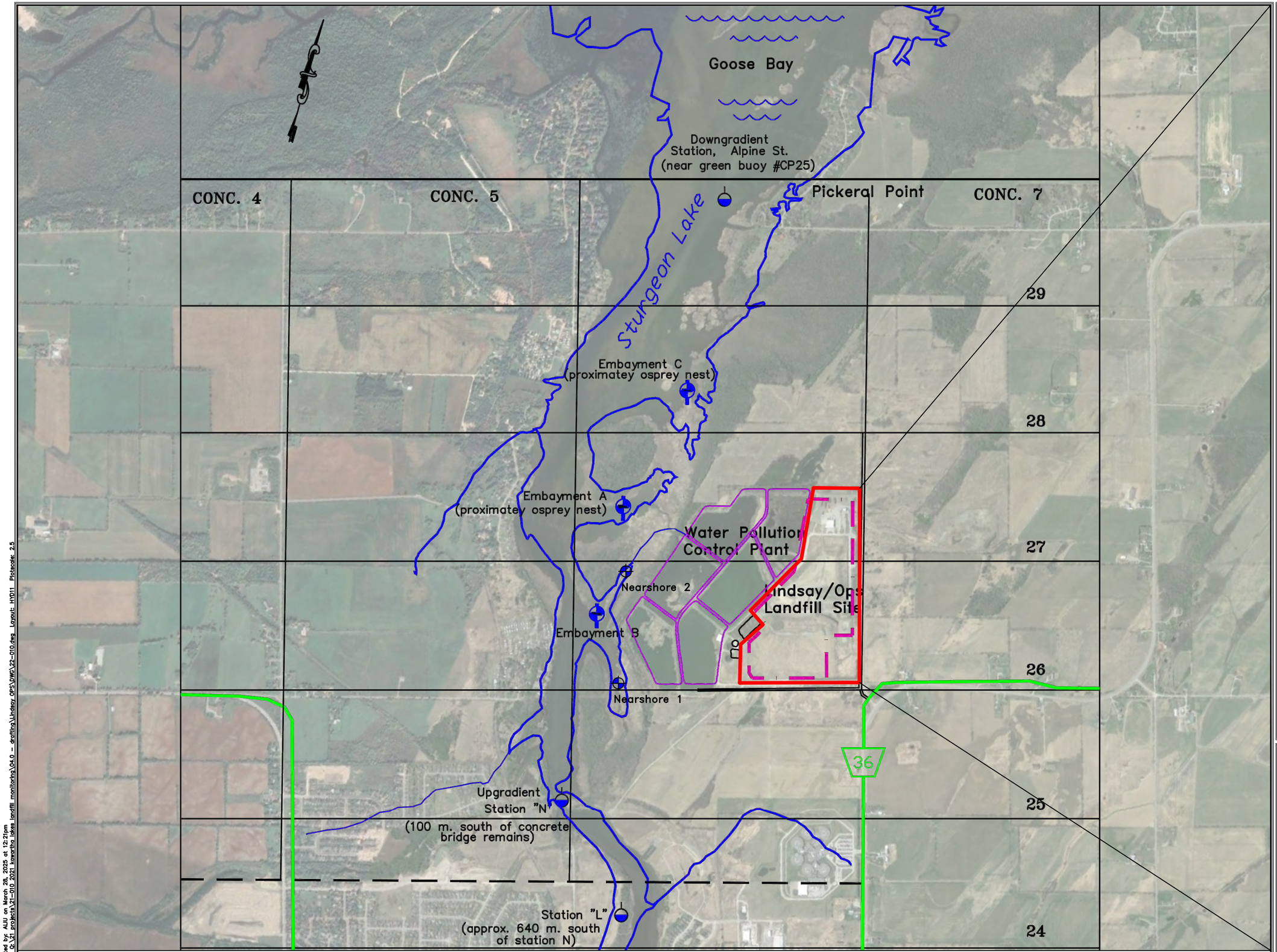

LEGEND:

- *Approx. Property Boundary*
- **Surface Water Sampling Locations**
- **Embayment Sampling Locations**

Not to Scale

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Scugog River Surface Water Sampling Locations

Lindsay OPS Landfill, Lindsay, ON

DATE ISSUED:	*March 2025*	Figure No. 11
CREATED BY:	*JLM*	
PROJECT NO.:	*25-010*	
REFERENCE:	*Kawartha Lakes*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

Plotted by: AUU on March 28, 2025 at 12:21pm
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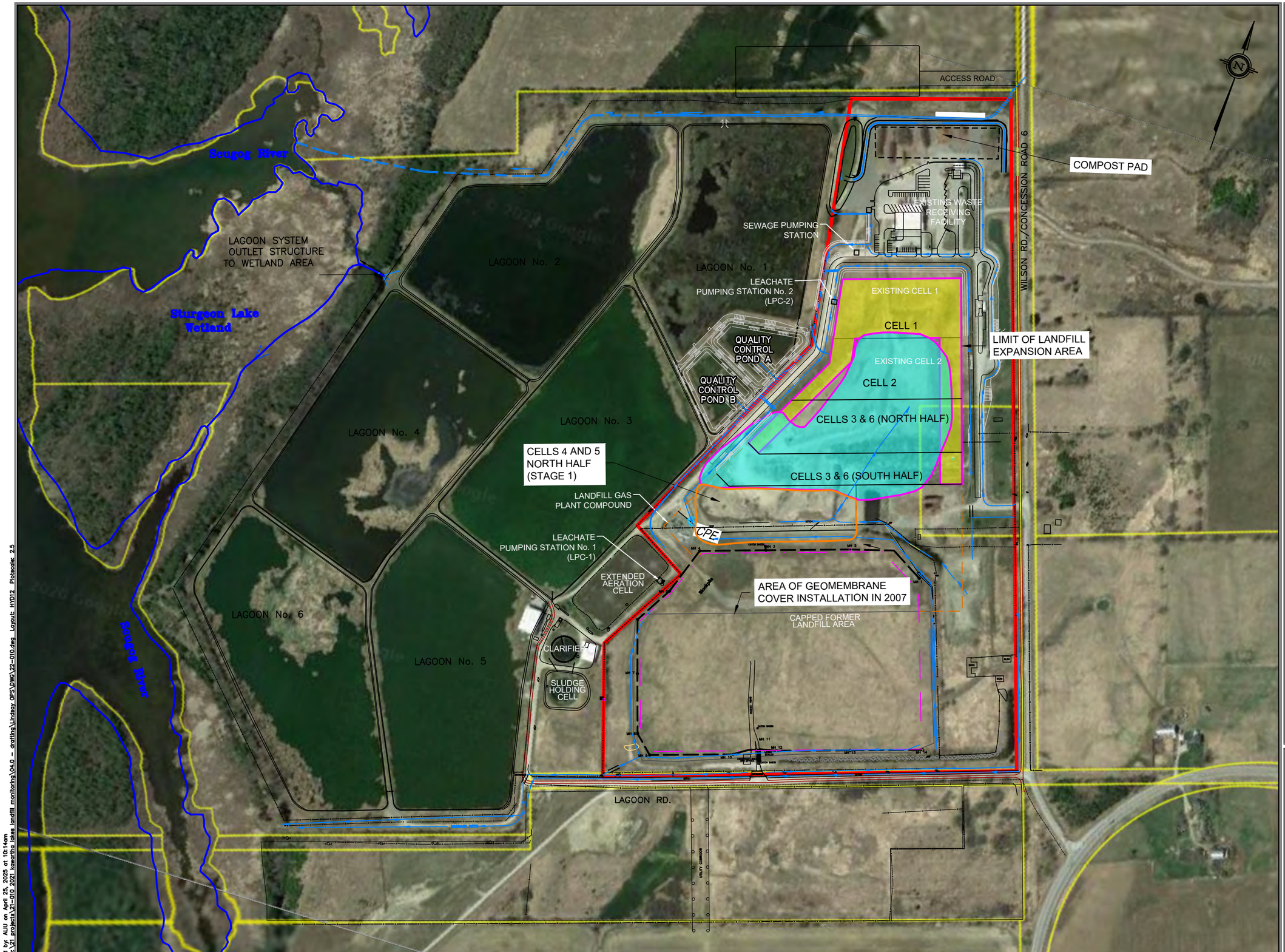

LEGEND:

- *Approx. Property Boundary*
- *Limit of Old Landfill*
- *Limit of Landfill Expansion Area*
- *Leachate Collector*
- *Fence*
- *Approx. Area of Site where landfilling is complete (final contours have ben reached and final cover placed) (December 2018)*
- *Approx. Area where Interim Cover has been placed (2020)*
- *2024 Landfill Working Area*

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Site Operations and Cover Plan

Lindsay OPS Landfill,
Lindsay, ON

DATE ISSUED:	*March 2025*	Figure No. 12
CREATED BY:	*JLM*	
PROJECT NO.:	*25-010*	
REFERENCE:	*First Base Solutions*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

Plotted by: AUU on April 25, 2025 at 10:14am
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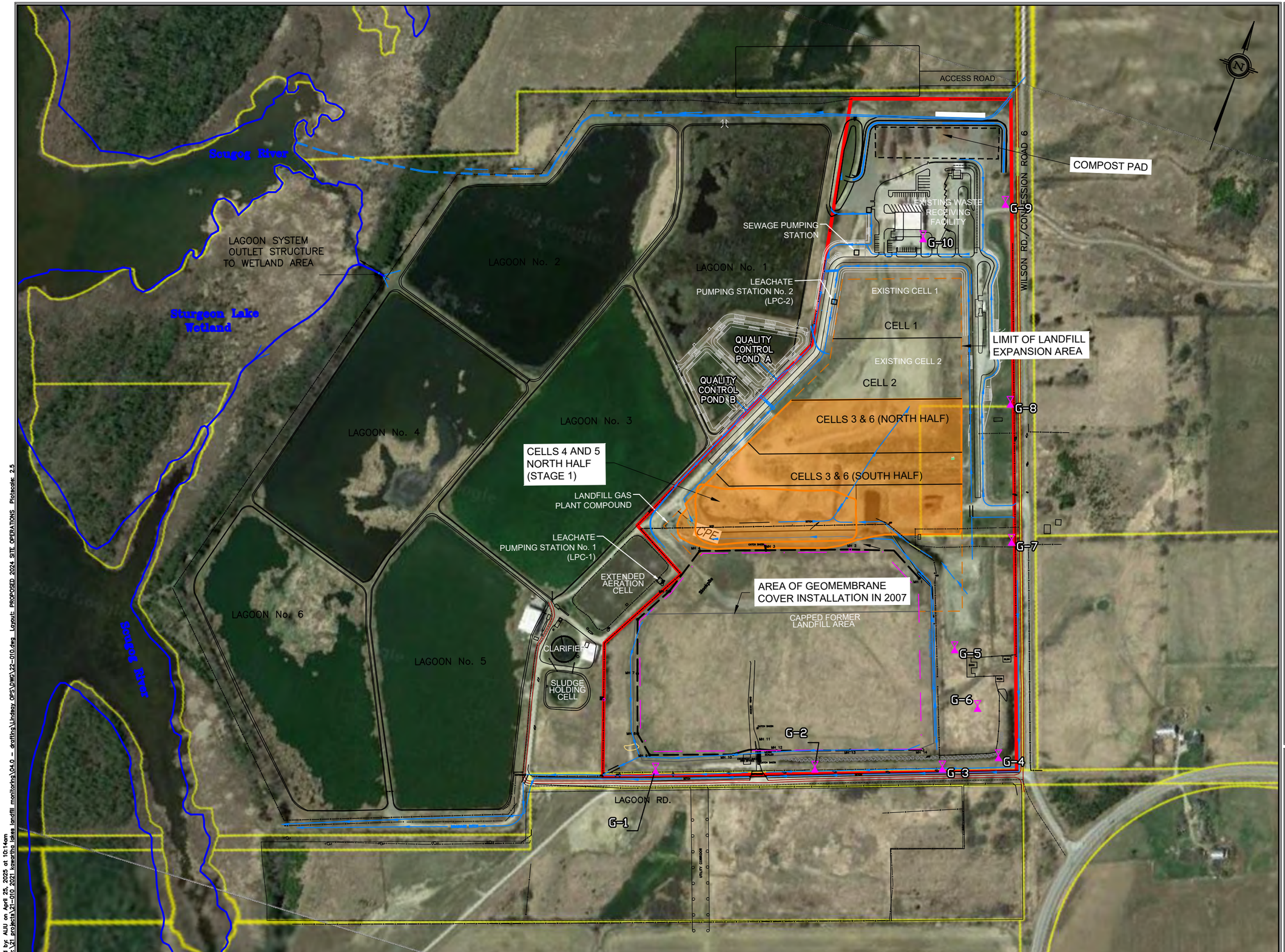


LEGEND:

- *Approx. Property Boundary*
- *Limit of Old Landfill*
- *Limit of Landfill Expansion Area*
- *Leachate Collector*
- *Fence*
- *Proposed Waste Disposal Areas 2025*

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

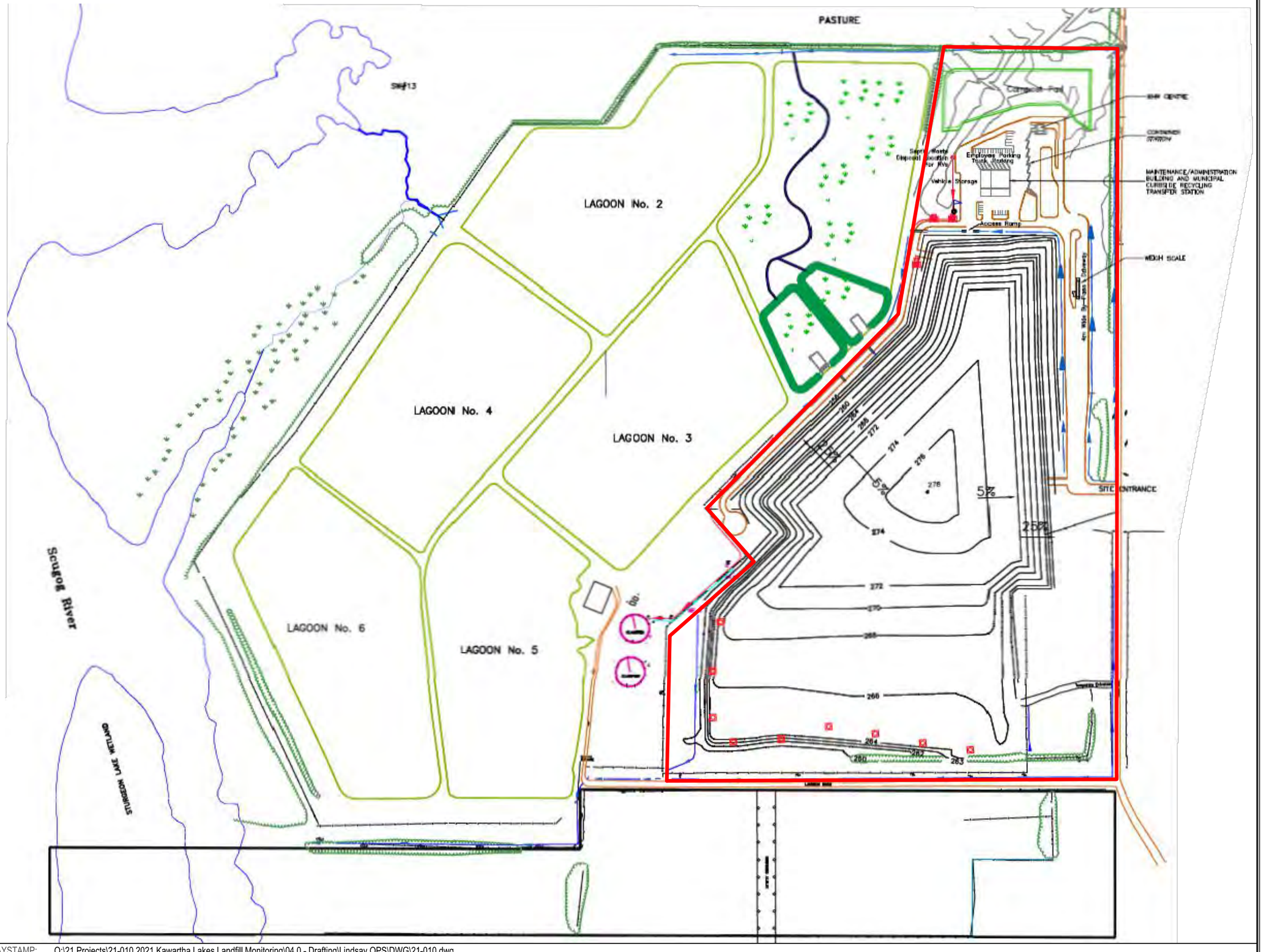
Proposed 2025 Site Operations

Lindsay OPS Landfill,
Lindsay, ON

DATE ISSUED:	*March 2025*	Figure No. 13
CREATED BY:	*JLM*	
PROJECT NO.:	*25-010*	
REFERENCE:	*First Base Solutions*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

Plotted by: AUU on April 25, 2025 at 10:14am
File: Q:\21 projects\21-010 2021 kawartha lakes landfill monitoring\04.0 – drafting\Lindsay OPS\DWG\22–010.dwg Layout: PROPOSED 2024 SITE OPERATIONS Plotscale: 2.5



LEGEND:

- *Approx. Property Boundary*
- *Contaminant Attenuation Zone*

Not to Scale

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Final Contour Plan

Lindsay OPS Landfill, Lindsay, ON

DATE ISSUED:	*March 2024*	Figure No. 14
CREATED BY:	*JLM*	
PROJECT NO.:	*25-010*	
REFERENCE:	*Kawartha Lakes*	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

Plotted by: ALU on March 28, 2025 at 12:21pm
File: Q:\21 projects\21-010 2021 kawartha lakes landfill monitoring\04.0 -- drafting\Lindsay OPS\DWG\22-010.dwg Layout: H1014 Plotscale: 2.5

APPENDICES

Appendix A	**MECP ECA No.: A323504**
Appendix B	**Sampling Protocols**
Appendix C	**Borehole Logs**
Appendix D	**Ground Water Level Data**
Appendix E	**Ground Water & Leachate Quality Summary Tables**
Appendix F	**Time Trend Chemistry Graphs**
Appendix G	**Old Landfill Perimeter Ground Water Quality Interpretation Tables**
Appendix H	**Ground Water Quality Summary Tables – PWQO Comparison**
Appendix I	**Laboratory Certificates of Analysis**
Appendix J	**Surface Water Photos**
Appendix K	**Surface Water Quality Summary Tables**
Appendix L	**Lindsay OPS Landfill Stormwater Management System - Annual Status Report 2024**
Appendix M	**2024 Toxicity Testing Laboratory Results**
Appendix N	**2024 Leachate Collection System Inspection Video Report**
Appendix O	**2024 Performance Report for the Lindsay WPCP**
Appendix P	**MECP Landfill Report Submission Form**

APPENDIX A

MECP ECA No.: A323504

Content Copy Of Original

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A321504
Issue Date: June 30, 2022

The Corporation of the City of Kawartha Lakes
322 Kent St W
Lindsay, Ontario
K9V 4T7

Site Location: Lindsay Ops Landfill
51 Wilson Road Rd
Kawartha Lakes City,
K9V 4R3

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act , R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

a landfill site with a 21.2 hectare waste fill area within a total site area of 53.9 hectares including buffer area to used for the disposal of Municipal Waste generated within the Owner of Kawartha Lakes.

For the purpose of this environmental compliance approval, the following definitions apply:

"Adverse Effect" means the same as the definition in the EPA;
"Approval" means this entire Environmental Compliance Approval, issued in accordance with Section 20.2 of the EPA, and includes any schedules to it, the application and the supporting documentation listed in schedule "A";
"Director" means any Ministry employee appointed in writing by the Minister pursuant to section 5 of the EPA as a Director for the purposes of Part V of the EPA;
"District Manager" means the District Manager of the local district office of the Ministry in which the Site is geographically located;
"EPA" means the Environmental Protection Act, R.S.O. 1990, c. E.19, as amended;
"Major Works" are those works that have an engineering component;
"Ministry" means the Ontario Ministry of Environment, Conservation and Parks (MECP);
"Municipal Waste" is as defined in Reg. 347;
"North expansion fill area" means the 13.24 hectare expansion waste disposal fill area, as shown on Map 2-1, Property Plan, Earth Tech Canada Inc., dated March 2001 (Item 35(m) in Schedule "A" attached to this Approval);
"NMA" means the Nutrient Management Act, 2002, S.O. 2002, c. 4, as amended;
"Operations and Maintenance Manual" means the most recent approved version of the Operations and Maintenance Manual required by Condition 4.2;
"Owner" means City of Kawartha Lakes;

"OWRA" means the Ontario Water Resources Act, R.S.O. 1990, c. O.40, as amended;
"Partially Composted Leaf and Yard Waste" is leaf and yard waste which has not been composted in strict accordance with Sections 31 to 33 of Regulation 101/94, Part V-Leaf and Yard Waste Composting Sites and can not be defined as Compost;
“PA ” means the Pesticides Act , R.S.O. 1990, c. P-11, as amended from time to time;
"PRC" means the Public Review Committee for this landfilling site, as described in the conditions in this Approval;
"Professional Engineer" means an engineer licensed to engage in the practice of professional engineering, as defined in the Professional Engineers Act, R.S.O. 1990, c. P-28, as amended;
"Provincial Officer" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the OWRA or Section 5 of the EPA or Section 17 of PA or Section 4 of NMA or Section 8 of SDWA;
"Reg. 232" means Ontario Regulation 232/98, Landfill Standards, made under the EPA, as amended;
"Reg. 347" means Regulation 347 of Revised Regulations of Ontario, 1990 (General - Waste Management), made under the EPA, as amended;
“Regional Director” means the Regional Director of the local Regional Office of the Ministry in which the Site is located;
"SDWA" means the Safe Drinking Water Act, 2002, S.O. 2002, c. 32, as amended;
"Site" means the entire waste disposal site, including the waste fill area and all buffer lands, including lands used for contaminant attenuation, approved by this Approval and located at 51 Wilson Road, Lindsay, Ontario;
"Waste fill area" means the area on the surface of the landfilling site beneath which or above which waste is disposed of by landfilling, including the existing and north expansion fill areas at this Site;

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

Compliance
1.1 The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Site is notified of the Approval and the conditions herein and shall take all reasonable measures to ensure the person complies with the same.
1.2 Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this Approval .
In Accordance
1.3 Except as otherwise provided for in this Approval , the Site shall be designed, developed, constructed, operated and maintained in accordance with the application for this Approval and the supporting documentation listed in Schedule “A”.
Other Legal Obligations

1.4 The issuance of, and compliance with, this Approval does not:

a. relieve any person of any obligation to comply with any provision of the EPA or any other applicable statute, regulation or other legal requirement; or
b. limit in any way the authority of the Ministry to require certain steps be taken or to request that any further information related to compliance with this Approval be provided to the Ministry ;

unless a provision of this Approval specifically refers to the other requirement or authority and clearly states that the other requirement or authority is to be replaced or limited by this Approval .

Adverse Effect

1.5 The Owner shall remain responsible for any contravention of any other condition of this Approval or any applicable statute, regulation, or other legal requirement resulting from any act or omission that caused the adverse effect or impairment of air and/or water quality.

Furnish Information

1.6 Any information requested by the Director or a Provincial Officer concerning the Site and its operation under this Approval , including but not limited to any records required to be kept by this Approval shall be provided in a timely manner.

1.7 The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action, under this Approval or under any statute, regulation or subordinate legal instrument, in relation to the information, shall not be construed as:

a. an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any condition of this Approval or any statute, regulation or other subordinate legal requirement; or
b. acceptance by the Ministry of the information's completeness or accuracy.

1.8 Any information related to this Approval and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, RSO 1990, CF-31.

Interpretation

1.9 This Approval revokes and replaces the previous Approval and all subsequent amendments.

1.10 Where there is a conflict between a provision of any document, including the application, referred to in this Approval , and the conditions of this Approval, the conditions in this Approval shall take precedence.

1.11 Where there is a conflict between the application and a provision in any documents listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the

Ministry approved the amendment in writing .
1.12 Where there is a conflict between any two documents listed in Schedule "A", other than the application, the document bearing the most recent date shall take precedence.
1.13 The conditions of this Approval are severable. If any condition of this Approval , or the application of any condition of this Approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.

Certificate of Requirement

1.14 Pursuant to Section 197 of the EPA , no person having an interest in the Site shall deal with the Site in any way without first giving a copy of this Approval to each person acquiring an interest in the Site as a result of the dealing.
1.15 In the event any additional land is acquired for the Site, then two (2) copies of a completed Certificate of Requirement, containing a registerable description of the additional lands for the Site , shall be submitted to the Director for the Director's signature within sixty (60) calendar days of any amendment to this Approval that incorporates the land into the Approval.
1.16 In the event any additional land is acquired for the Site, then the Certificate of Requirement shall be registered in the appropriate land registry office on title to the Site and a duplicate registered copy shall be submitted to the Director within ten(10) calendar days of receiving the Certificate of Requirement signed by the Director .

No Transfer or Encumbrance

1.17 No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance and is satisfied with the arrangements made to ensure that all conditions of this Approval will be carried out and that sufficient financial assurance is deposited with the Ministry to ensure that these conditions will be carried out.

Change of Owner

1.18 The Owner shall notify the Director , in writing, and forward a copy of the notification to the District Manager , within 30 days of the occurrence of any changes in the following information:

a. the ownership of the Site ;
b. the address of the Owner;
d. the partners, where the Owner is or at any time becomes a partnership and a copy of the most recent declaration filed under the Business Names Act , R. S. O. 1990, c. B.17, shall be included in the notification;
e. the name of the corporation where the Owner is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the Corporations Information Act , R. S. O. 1990, c. C.39, shall be included in the notification.

1.19 In the event of any change in the ownership of the Site, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this Approval , and a copy of such notice shall be forward to the Director

and District Manager .

Inspections

1.20 No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the EPA or the PA , of any place to which this Approval relates, and without limiting the foregoing:

a. to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this Approval are kept;
b. to have access to, inspect, and copy any records required to be kept by the conditions of this Approval ;
c. to inspect the Site, related equipment and appurtenances;
d. to inspect the practices, procedures, or operations required by the conditions of this Approval ; and
e. to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Approval or the EPA or the PA .

2.0 CONSTRUCTION, INSTALLATION AND PLANNING

Major Works

2.1 For the purposes of this Approval the following are considered Major Works:

a. gas management system;
b. leachate collection system;
c. stormwater management system;
d. final cover;
e. liner system;
f. Household Hazardous Waste Facility;
g. Re-use Centre; and
h. Leaf and Yard Waste Facility.

2.2 A final detailed design shall be prepared for each Major Work to be constructed at the Site consistent with the conceptual design of the Site as presented in the Supporting Documentation in Schedule "A".

2.3 The final detailed design of each Major Work shall include the following:

a. design drawings and specifications;
b. a detailed quality assurance / quality control (QA/QC) program for construction of the major work, including necessary precautions to avoid disturbance to the underlying soils; and
c. details on the monitoring, maintenance, repair and replacement of the engineered components of the major work, if any.

2.4 Any design optimization or modification that is inconsistent with the conceptual design shall be clearly identified, along with an explanation of the reasons for the change.

2.5 The final detailed design of each Major Work shall be submitted to the Director for approval and copied to the District Manager.
2.6 Each major work shall be constructed in accordance with the approved final detailed design and the QA/QC procedures shall be implemented as proposed by the Owner. Any significant variances from the conceptual design for the Site shall be subject to approval by the Director.
2.7 As-built drawings for all Major Works shall be retained on site and made available to Ministry staff for inspection.

Compacted Soil Liner

2.8 The soil liner in the North expansion fill area (base and sideslopes, except common north slope of existing fill area) shall be placed and compacted to a minimum thickness of **750 mm** , compacted in at least **5 lifts** of no more than **0.15 metres** in compacted thickness each, and to achieve a hydraulic conductivity of **1 x 10 $^{-7}$ cm/sec or less** , in addition to the design recommendations in Section 4.3.3 in the Design Report, Item 28(b) in Schedule "A", as amended in Items 35 and 37 in Schedule "A" attached to this Approval.
2.9 During installation of the compacted soil liner, care shall be taken to:

a. control soil properties and water content;
b. ensure the break-up of clods;
c. control lift thickness and compaction;
d. remove stones larger than 100 millimetres in diameter;
e. prevent desiccation of the compacted clayey liner;
f. prevent damage to the compacted clayey liner due to freezing;
g. prevent damage to the compacted clayey liner from vehicular traffic;
h. prevent damage to the compacted clayey liner due to rodents; and
i. prevent damage to the compacted clayey liner due to differential settlement.

2.10 As part of the liner construction protocol, the Owner shall ensure that a soils technician, under the direction of a suitably qualified geotechnical Professional Engineer shall be on the Site full-time during construction of the compacted soil liner. Responsibilities shall include maintaining the quality of the liner in terms of evaluating soil suitability, water content, compaction effort and density, and to verify that the liner is placed according to the technical specifications.
2.11 The report of a suitably qualified geotechnical Professional Engineer shall be included in each Site Preparation Report and must confirm that there is no evident cracking in the constructed liner or significant occurrence of clods, stones, branches or other material that could shorten the service life of the constructed liner or significantly increase the hydraulic conductivity of the liner.
2.12 In addition to the trial soil liner construction (Item 28(d)(iv) in Schedule "A"), additional test pits shall be excavated during the detailed design stage to estimate the quantity of suitable liner material available from the excavation of each cell and from the Owner-owned lands south of the existing fill area. Prior to the actual construction of

the landfill base liner system in the north expansion fill area at this Site with a new source of liner material, the Owner shall submit a report prepared by a suitably qualified geotechnical Professional Engineer to the Director and District Manager which demonstrates and ensures that the materials and installation/construction procedures will produce a liner system that will meet the liner design specifications and performance objectives.

2.13 The Owner shall notify the District Manager in writing prior to placement of the compacted soil liner that a qualified geotechnical Professional Engineer has inspected and approved the native soil sub-grade for placement of the overlying compacted soil liner.

2.14 No later than seven (7) days after completion and inspection of the base excavation, the Owner shall submit to the District Office an interim inspection report for the base excavation and preparation. The report shall be prepared by a qualified geotechnical Professional Engineer.

Geosynthetic Clay Liner

2.15 Prior to installation of the Geosynthetic Clay Liner (GCL) liner, the Owner shall provide to the Director construction and installation procedures including the following:

a. procedures for hydrating the GCL in the field;
b. details regarding visual inspection of the suitability of the subgrade;
c. methods of protecting the GCL during shipping, storage and handling;
d. deployment of the GCL at the construction site, a panel layout plan, seam preparation, seaming methods;
e. methods to avoid opening of seams due to movement as overlying layers are placed.
f. a description of the inspection, sampling and testing methods and frequencies to be employed to assure that the GCL meets the design requirements;
g. a demonstration that adequate shear strength will be provided in the GCL and between the GCL and other components of the liner system so that slippage and sloughing does not occur on the slopes of the landfill.

Geomembrane Liner

2.16 (1) The geomembrane must be made of high density polyethylene (HDPE) and must have a thickness of at least 1.5 millimetres.

(2) The geomembrane liner shall be installed in direct and uniform contact with a suitable foundation.
(3) The geomembrane must be protected against puncturing and load induced damage at all times including during installation.
(4) During installation, care must be taken to:

a. remove wrinkles in the geomembrane;
b. minimize stress concentrations;
c. ensure high quality seams;
d. minimize differential settlement;
e. minimize exposure to ultraviolet light;
f. prevent damage due to sliding;
g. prevent damage due to installation in cold conditions, and
h. prevent damage due to rodents.

Geosynthetic Clay Liner (GCL) and Geomembrane

2.17 To ensure that the geosynthetic products specified in the design have been supplied and installed in accordance with the design drawings and specifications, a qualified inspector(s) shall be on the Site during construction to sample, test and confirm installation in accordance with the recommendations of the manufacturers, design drawings and specifications, and QA/QC procedures.

Geotechnical Inspection and Assessment

2.18 Excavation within and preparation of the foundation soils underlying the Site and construction of the base liner of the leachate containment system in a new cell shall be inspected by a suitably qualified geotechnical Professional Engineer to ensure that preparation and construction proceeds in accordance with approved detailed design plans, technical specifications and QA/QC activities and procedures. The results of inspections shall be included in the Site Preparation Reports and subsequent inspection reports for the Site. No landfilling of wastes shall occur on any portion of the liner and leachate collection system until the Director and District Manager have received an inspection report from the engineer indicating that the portion of the base liner of the leachate containment system has been constructed as required by this Approval.

Inspections with respect to the base liner system shall include assessment of the following:

a. The adequacy of extracted till material from the landfill excavation and/or clayey material from the clay borrow pit(s) for base liner construction and leachate/liner compatibility;
b. The acceptability of foundation conditions to ensure adequate bearing capacity and slope stability, adequate provisions to prevent basal heave or blowout, absence of standing water, and absence of potential conduits for leachate and landfill gas migration; and
c. Compliance with liner installation specifications and QA/QC procedures related to items such as grain size distribution and clay content of native and borrow materials, clod size limits, removal of stones, Atterberg limits, compaction moisture content, compaction effort, required Standard Proctor

Density, lift thickness, scarification between lifts, permeability, and procedures to avoid desiccation of the clayey liner.

2.19 During excavation for landfill base preparation, any intersected granular lenses, interbedded layers, wells, boreholes, agricultural drains, or other possible groundwater conduits encountered in the excavation, shall be adequately mapped, and removed/over-excavated or sealed with appropriately engineered low permeability materials, as necessary, prior to liner construction and landfilling.

Pre-Loading of North Slope

2.20 The north slope of the existing fill area shall be pre-loaded with soil for a minimum of five (5) years to expedite the waste settling process prior to placement of the GCL, geomembrane and leachate collection system for the north expansion fill area on the common north slope, and in accordance with Section 4.3.4 in the Design Report and Section 3.2.4 in the Maintenance & Operations Report, Items 28(b) & 28(c) in Schedule "A", as revised in Items 31 to 37 in Schedule "A" attached to this Approval.

Site Preparation Report

2.21 The Owner shall not commence landfilling in a newly prepared cell in the south expansion fill area of Cell 4 & 5 (south half) until a written report has been submitted to the Director and District Manager documenting all construction, QA/QC activities and procedures, and confirming that the Site conditions and details of the construction of the fill area are in accordance with the approved design plans and specifications for the Site, and including sufficient baseline data from existing and new monitoring installations to support environmental monitoring programs for the Site.

3.0 APPROVED WORKS

Liner System Approval

3.1 (1) Approval is hereby granted for the detailed design for the Cells 1, 2, 3, 6, 4 & 5 (south half) base liner and leachate collection system, all in accordance with the following documentation, hereby added to Schedule "A" of this Approval .

(2) The Owner shall construct the northern half of Cells 4 and 5, base liner and leachate collection system in accordance with the following Items 88 through 92 in Schedule "A" of this Approval.

(3) Alterations to the base liner and collection system connections between Cells 4 and 5 (North Half) Stage 2 and Cells 3 and 6 are approved in accordance with Item 104 of Schedule "A":

(4) The Owner shall construct the southern half of Cells 4 and 5, base liner and leachate collection system in accordance with Item 106 in Schedule "A" of this Approval.

Ancillary Features

3.2 Approval is hereby granted for the detailed design of ancillary facilities associated with landfill expansion, including new site entrance and roads, weigh scales and scale house, multi-use operations building (administration, vehicle maintenance, re-use depot

and recycling depot), household hazardous waste (HHW) depot, leaf and yard waste composting facility, and public waste drop-off container station, all in accordance with the documentation in Schedule “A” in the Approval.

Landfill Gas Collection System

3.3 (1) The landfill gas collection and flaring system shall be constructed and operated in accordance with Items 57 through 59 and 103 in Schedule “A”.

(2) For the future phases of the landfill gas collection and flaring system, the Owner shall submit the final detailed design to the Director for approval, with copies to the District Manager prior to construction.

3.4 Prior to construction of extensions of the landfill gas collection and flaring system, the Owner shall have in place, and available for Ministry's review upon request, the following:

a. An odour control plan to minimize odour impacts off-site during the construction phase;
b. A monitoring plan for odour and air emissions during the construction phase of the work and post-construction phase;
c. A sediment/erosion control plan to be implemented during the construction and post-construction for the installation of the landfill gas collection and flaring system.
d. A construction schedule for the installation of the landfill gas collection and flaring system;

3.5 Within ninety (90) days of commissioning of extensions to the landfill gas collection and flaring system, the Owner shall submit to the District Manager a construction report detailing the construction activities and any design changes made to the system during construction. This report shall include but not be limited to the following topics:

a. “as-built” drawing(s) of the location of the landfill gas collection and flaring system;
b. a description of the various construction stages;
c. quality assurance/quality control plan for the construction; and
d. any changes to the design of the landfill gas collection and flaring system.

3.6 (1) In the event a gas well needs replacing due to damage or the well is deemed to be not functioning properly, the Owner may replace the gas well.

(2) The Owner shall notify the District Manager in writing that a well is being replaced, no later than fourteen (14) days prior to replacement of the well. The replacement well shall be located at the same location as the replaced well or in the immediate vicinity of the well it is replacing.

(3) For any other major repairs, replacements and/or upsets of the landfill gas collection and flaring system, the Owner shall notify the District Manager in writing within thirty (30) days of the changes. Such changes shall also be included in the landfill annual

report.

Leachate Collection and Disposal System

3.7 The Leachate Collection and Disposal System consists of the Leachate Pumping Station No. 1; Leachate Pumping Station No. 1; and Sewage Pumping Station, that are described as follows and in accordance with documentation listed in Schedule 'A':

a. Leachate Pumping Station No. 1 consists of:
One (1) 1.8 m diameter x 6.4 m deep concrete pumping station equipped with two (2) stainless steel submersible pumps (one on standby) each rated at 7.0 L/s @ 17.3 m TDH, one (1) 1.8 m wide x 2.4 m long x 2.4 m deep valve chamber, receiving leachate from the existing landfill cells through a 150 mm diameter sewer and discharging through a 75 mm diameter forcemain and a 75 mm magnetic flow meter into the inlet works of the Lindsay WPCP.
b. Leachate Pumping Station No. 2 consists of:
One (1) 1.8 m diameter x 7.3 m deep fibreglass package pumping station equipped with two (2) stainless steel submersible pumps (one on standby) each rated at 7.0 L/s @ 17.5 m TDH, one (1) 2.4 m wide x 3.0 m long x 2.7 m deep valve chamber equipped with 75 mm magnetic flow meter, receiving leachate from the new landfill cells through a 200 mm diameter PVC sewer and discharging through a 100 mm diameter forcemain into a Sewage Pumping Station described below or into the inlet works of the Lindsay WPCP when the need arises.
c. Sewage Pumping Station consists of:
One (1) 3.6 m diameter x 6.7 m deep precast concrete pumping station equipped with three (3) stainless steel submersible pumps (two on duty in parallel and one on standby) each rated at 7.5 L/s @ 25.5 m TDH, receiving leachate from Leachate Pumping Station No. 2, septage from a septage dumping station through a 250 mm diameter sewer and sewage from site buildings through a 200 mm diameter sewer, and discharging through a 150 mm diameter forcemain and a 100 mm magnetic flow meter, into the inlet works of the Lindsay WPCP; and
d. Including all controls, alarms, and associated appurtenances.

4.0 GENERAL OPERATIONS

Proper Operation

4.1 A. **Site Operations:**

The Site shall be properly operated and maintained at all times. All waste shall be managed and disposed of in accordance with the EPA and Reg. 347 and the requirements of this Approval. At no time shall the discharge of a contaminant that causes or is likely to cause an Adverse Effect be permitted.

B. **Leachate Collection and Disposal System (LCDS) Operations:**

a. The Owner shall exercise due diligence in ensuring that, at all times, the LCDS and the related equipment and appurtenances used to achieve compliance with this Approval; are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate staffing and training.
b. The Owner shall ensure that the total maximum flow of leachate from Leachate Pumping Station No.1 and Leachate Pumping Station No.2 into the Lindsay Water Pollution Control Plant does not exceed the peak flow rate of 750 m^3/day at any time.
c. The Owner shall ensure that the total average daily flow of leachate from Leachate Pumping Station No. 1 and Leachate Pumping Station No. 2 into Lindsay Water Pollution Control Plant does not exceed 300 m^3/day for any period of time greater than one (1) calendar year.
d. Any diversion of sewage flow from any portion of the LCDS is prohibited, except:

i. where it is unavoidable in preventing loss of life, danger to public health, personal injury or severe property damage; or
ii. where it is necessary for the purpose of essential maintenance of the LCDS to assure their efficient operation, and the District Manager has given a prior written approval for the bypass.

Operations Manual

4.2 The Operations and Maintenance Manual shall be updated and submitted to the Director for approval, with copies to the District Manager every five years by December 31 st , that includes, but is not necessarily limited to, the following information:

a. Health and safety;
b. Operation and maintenance of the Site and for routine operation of the LCDS;
c. Waste acceptance;
d. Waste disposal area and development;
e. Nuisance management;
f. Leachate management;
g. Landfill gas management;
h. Surface Water/Storm water management;
i. Inspections and monitoring programs for the Site and the LCDS, including frequency of inspection, for the LCDS and the methods or tests employed to detect when maintenance is necessary;

j. Contingency plans and emergency procedures for the Site and the LCDS. The LCDS plans shall also include a spill prevention control and countermeasures plan, consisting of contingency plans and procedures for dealing with equipment breakdowns, potential spills and any other abnormal situations, including notification of the District Manager;
k. Complaints;
l. Reporting and record keeping:
m. Repair and maintenance programs, including the frequency of repair and maintenance for the LCDS; and
n. Procedures for the inspection and calibration of monitoring equipment for the LCDS.

4.3 The Operations and Maintenance Manual shall be:

a. retained at the Site
b. reviewed on an annual basis and updated by the Owner as required; and
c. be available for inspection by Ministry staff.

Service Area

4.4 Only wastes generated from within the geographic boundaries of the City of Kawartha Lakes may be received for final disposal at this Site. Wastes may be received from outside the geographic boundaries of the City of Kawartha Lakes if it is only for the purposes of temporary storage and is sent off-site for final disposal, reuse or recycling.

Capacity

4.5 (1) The total waste disposal capacity of the Site expansion in the north expansion fill area, including waste, daily cover and interim cover, is **1,487,240 cubic metres** . This volume does not include the composite liner, leachate collection system and final cover. The total waste disposal capacity of the Site (existing fill area and the north expansion fill area), including waste, daily cover and interim cover, is approximately 2.34 million cubic metres.

(2) The amount of waste and daily and interim cover materials deposited at the Site shall not exceed the Site capacity as defined in Condition 4.5 (1) of this Approval.

Waste Fill Rate

4.6 The maximum rates at which this Site may receive waste are **240 tonnes per day** and **58,200 tonnes per calendar year** . Receipt of waste in excess of the daily maximum fill rate may only be allowed on a limited short-term basis, on no more than two consecutive operating days.

Waste Placement

4.7. No waste shall be landfilled outside of the **limit of fill area** for the existing and expansion waste disposal fill areas shown on Map 2-1, Property Plan, dated March 2001 (Item 35(m) in Schedule “A” attached to this Approval).

4.8 No waste shall be landfilled below the **base contours** shown on Map 4-5, Proposed Base Contours, dated March 2001 (Item 35(m) in Schedule “A” attached to this Approval).
4.9 No waste shall be landfilled at any time above the **final contours** shown on Map 4-6, Proposed Final Contours, dated March 2001 (Item 35(m) in Schedule “A” attached to this Approval). The maximum elevation of the north expansion fill area shall be **278 metres above sea level** , including final cover.
4.10 No waste shall be landfilled in the contaminant attenuation zone described in Items 23, 24, 25 and 26 in Schedule “A” attached to this Approval.

Waste Inspection Procedures

4.11 The Owner shall develop and implement a program to inspect waste to ensure that the waste is of a type approved for acceptance under this Approval.
4.12 The Owner shall conduct appropriate inspections and ensure that appropriate controls are in place to prevent the acceptance of liquid industrial waste and hazardous waste and to prevent the acceptance of waste from outside the approved service area. Records of violations by haulers or waste generators shall be recorded in the daily records for the Site operations. The Owner shall forthwith notify the District Manager of any and all waste load refusals at the Site related to requirements in this Approval, including service area and waste types.

Waste Inspection and Deposition

4.13 All loads of waste must be inspected by trained site personnel prior to acceptance at the Site and waste vehicles must be diverted to appropriate areas for waste disposal.

Cell Development

4.14 Waste landfilling operations shall generally move from north to south in the north expansion fill area to accommodate the pre-loading and to allow for settling of the north slope area of the existing fill area. Cell designation and initial development is shown on Map 4-2, Initial Cell Development Plan, dated March 2001 (Item 35(m) in Schedule "A" attached to this Approval), and shall proceed as follows: 1, 2, 3, 6, 4A, 4B, 5A, 5B.

Hours of Operation

4.15 The maximum operating hours for the Site for receipt of waste for disposal, Site preparation, Site maintenance and daily cover activities are from **Monday through Saturday** between the hours of **7:00 a.m. and 7:00** p.m.
4.16 With prior notification to the PRC and written approval of the District Manager, the time periods may be extended to accommodate seasonal or unusual quantities of waste.
4.17 The Owner may provide limited hours of operation provided that the hours are posted at the landfill gate and that suitable notice is provided to the public of any change in operating hours.
4.18 Upon reasonable notice to the District Manager, contingency actions may take place outside normal hours of operation. Emergency response may occur at any time as required.

Signage

4.19 Signs shall be placed at the landfill Site entrance/exit indicating, at a minimum, the

following:

a. Name of the landfill and name of the owner;
b. Ministry Approval Number;
c. Days and hours of operation and public use;
d. Telephone number/contact at the City of Kawartha Lakes;
e. Area served by the landfill;
f. Types of waste accepted and prohibited;
g. Overview of landfill complaints procedure, including a phone number for registering a complaint;
h. Unauthorized entry is prohibited; and
i. A warning against dumping wastes outside the Site.

4.20 Signs shall also be posted along internal access roads controlling vehicle speed, turning movements and to direct vehicles to the working face and other designated areas and facilities on the Site, as appropriate. All landfill signs shall be kept legible, in good repair, and cleaned when required.

Site Supervision and Security

4.21 (1) No waste shall be received, landfilled or removed from the Site unless a Site supervisor or attendant is present and supervises the operations during operating hours. The Owner shall ensure that adequately trained persons are on duty at all times during the operation of the Site to provide proper supervision of all waste management activities. Incoming waste shall be inspected prior to acceptance at the Site to ensure that the Site is approved to accept that type of waste.

(2) During non-operating hours, the Owner shall ensure that the Site entrance and exit gates shall be locked and the Site shall be secured against access by unauthorized persons.

On-Site Roads

4.22 On-Site roads shall be provided and maintained in a manner that vehicles hauling waste to and on the Site may travel readily and safely on any operating day. During winter months, when the Site is in operation, roads must be maintained to ensure safe access to the landfill working face. The Owner may establish and use temporary working roads for landfill operating and construction equipment, as needed.

Litter Control, Vermin, Scavenging, Dust, Litter, Odour, Noise, etc.

4.23 The Owner shall implement control measures for dust, odour, litter, noise, birds, vector and vermin in accordance with Sections 6.1 to 6.6 in the Operations and Maintenance Manual. Effectiveness of the control measures shall be reviewed and monitored regularly and updated/revised, as required, based on operational experience and complaints.

4.24 Controlled removal of reusable material from the Site may only occur in a designated and supervised area of the Site.

4.25 (1) Litter from the Site shall be picked up on a daily basis along the Site's perimeter and access roads.

(2) Upon the consent of neighbouring residents, the Owner shall, at its own expense, remove landfill-related litter from neighbouring properties on a daily basis. Landfill-related litter on municipal or public roads within 500 metres of the Site shall be removed monthly by the Owner, upon the consent of the authorities having jurisdiction over such roads.

4.26 Visual screening shall be installed, inspected and maintained as required during the operating life of the landfill Site.
4.27 The Owner shall carry out a program to minimize dust, based on dust control measures in Section 6.1 in the Operations and Maintenance Manual. Accurate records shall be kept of the use of any chemical dust suppressants, including date and location of application on the Site. Effectiveness of the dust suppression plan shall be reviewed and monitored regularly and updated/revised, as required, based on operational experience and complaints. Measures shall be taken to prevent mud-tracking off the Site.

Noise Control

4.28 Noise shall be controlled in accordance Section 6.4 in the Operations and Maintenance Manual. Noise from or related to the operation of the landfill shall be kept to a minimum and in any event, the Owner shall comply with the criteria set out in the Ministry's "Noise Guidelines for Landfill Sites":

a. The limits for sound levels due to the landfilling Site operation at a point of reception are 45 dBA in any hour of the night, 7:00 p.m. - 7:00 a.m., and 55 dBA in any hour of the day, 7:00 a.m. - 7:00 p.m. These levels are expressed in terms of the One Hour Equivalent Sound Level (Leq).
b. For impulsive sound, other than quasi-steady impulsive sound, from a pest control device employed to deter birds from the landfilling Site, the applicable sound level limit at a point of reception expressed in terms of the Logarithmic Mean Impulse Sound Level (LLM) is 70 dBAI.
c. For quasi-steady impulsive sound, but not including other impulsive sound from a pest control device employed to deter birds from the landfilling Site, the applicable sound level limit at a point of reception expressed in terms of the One Hour Equivalent Sound Level (Leq) is 60 dBA.

Gull Control

4.29 The Owner shall implement and carry out the Gull Control Program (Habitat Management, Active and Lethal Control Measures, Contingency Exclusions Measures, Personnel and Training, Monitoring and Reporting) for the landfill Site, in accordance with Item 30 in Schedule "A", as soon as possible following issuance of this Approval, acquisition of required permits and specific equipment, and staff training.

Other Controls

4.30 Bare soil surfaces on the landfill Site shall be minimized and vegetated, as

necessary, to prevent loafing by gulls. Specifically, bare soil areas that will remain unused for extended periods of time (4 months or more) shall be seeded with a grass/weed seed mixture to establish tall vegetation (> 20 cm).

4.31 (1) The Owner shall empty the open-air garbage bins at the Residential Container Station at the Site when they are near capacity No waste materials other than approved by this Approval shall be placed/stored outside of the bin.

(2) In the event gulls become a nuisance at the station, the Owner shall implement the approved gull control measures as approved by this Approval.

(3) In the event the approved gull control measures are unsuccessful in alleviating gull nuisances at the station, the Owner shall submit to the Director for approval, a plan that provides alternative methods (from those already approved) to minimize nuisance created by gulls at the station.

4.32 The Site shall be actively monitored to eliminate pools of standing water and reduce the attraction to gulls for loafing. Areas of standing water shall be regraded or filled with soil as soon as practically possible.

4.33 The stormwater management pond for this landfill Site shall be designed and constructed to discourage use of the pond by gulls as a loafing site during the day. Pond design shall consider high perimeter berms and dense planting of trees or tall shrubs on the berms.

4.34 Construction of berms on the Site using a mixture of soil and waste shall not use waste that contains food scraps.

4.35 Any long-term soil stockpiles on the Site shall be seeded with a grass/weed seed mixture to establish vegetation in order to minimize soil erosion, dust and attraction by gulls for loafing.

4.36 The Owner shall ensure that one full-time staff member at the landfill Site shall be designated as the Control Officer responsible for directing daily gull control program activities.

4.37 Prior to the implementation of the gull control program and on a regular basis thereafter, all staff directly responsible for daily operation of the landfill shall be trained on all aspects of the program in accordance with Section 5 in Item 30 in Schedule "A" of this Approval, as amended.

4.38 The Owner shall make its best efforts to communicate and cooperate with management staff of the Lindsay Airport regarding the effectiveness of the gull control program for the landfill Site. The Annual Report (Condition 15) shall be made available to management staff of the Lindsay Airport.

Paved Roads and Parking Lots

4.39 Use of chloride-based de-icing salts on paved surfaces (on-site roads and parking areas) shall be minimized in order to limit the potential for groundwater contamination and interference with groundwater / leachate monitoring for the Site. Alternative de-icing products may be used to ensure safe vehicle operations during winter conditions. Accurate records of application of de-icing products (type, date, amount, location) shall

be prepared and maintained.

Spills

4.40 All spills and upsets shall be immediately reported to the Ministry's Spills Action Centre (SAC) and shall be recorded in a log as to the nature of the spill or upset, and the action taken for clean-up, correction and prevention of future occurrences.

Subsurface Migration of Landfill Gas

4.41 The Owner shall ensure that all buildings and structures to be built on the Site shall be situated, constructed and monitored in a manner which minimizes the potential for explosive hazards due to landfill gas. Methane detection and alarm equipment, with active venting or with an effective passive venting system to relieve any possible landfill gas accumulation, shall be installed and maintained for all enclosed buildings on the Site which at times are occupied by people. Routine monitoring for explosive methane gas levels shall be conducted in all buildings on the Site, especially enclosed structures which at times are occupied by people.

4.42. The design of the Site and any plans, specifications and descriptions for the control of landfill gas must ensure that the subsurface migration of landfill gas meets the following limits from Section 14(2) of Reg. 232,:

a. The concentration of methane gas below the surface of the land at the boundary of the Site must be less than 2.5 per cent by volume;
b. The concentration of methane gas must be less than 1.0 per cent by volume in any on-Site building or enclosed structure, and in the area immediately outside the foundation or basement floor of the building or structure, if the building or structure is accessible to any person or contains electrical equipment or a potential source of ignition;
c. Sub-condition (b) does not apply to a leachate collection, storage or treatment facility or a landfill gas collection or treatment facility for which specific health and safety measures and procedures are in place relating to the risk of asphyxiation and the risk of explosion; and
d. The concentration of methane gas from the Site must be less than 0.05 per cent by volume in any off-Site building or enclosed structure, and in the area immediately outside the foundation or basement floor of the building or structure, if the building or structure is accessible to any person or contains electrical equipment or a potential source of ignition.

4.43 The Owner shall follow the landfill gas trigger level and contingency response plan described in the Operations and Maintenance Manual. If the measured gas concentration at a gas probe exceeds the applicable Reg. 232 limit, the reading shall be re-measured immediately and daily for a period of up to 3 consecutive days. If these readings confirm the applicable limit has been exceeded, appropriate control measures shall be implemented as soon as possible thereafter.

Granular Leachate Collection Layer

4.44 (1) A thickness of at least five (5) metres of compacted waste and cover material shall be maintained between any landfilled sludge (solid non-hazardous as per Reg.

347) and the granular leachate collection layer.

(2) The maximum path of that leachate may travel prior to intercepting a leachate collection pipe shall be not more than 50 metres in length.
(3) Pipes must be bedded in a continuous layer of stones that extends completely across the base of the waste fill zone and that has a minimum thickness of 0.3 metres on the base side slopes and a minimum thickness of 0.5 metres elsewhere. The stones must have a D_{85} of not less than 37 millimetres, a D_{10} of not less than 19 millimetres, a uniformity coefficient (D_{60}/D_{10}) of less than 2.0 and, when measured by weight, not more than 1.0 per cent of the stones may pass the US #200 sieve.

4.45 Heavy equipment, such as the landfill compactor, shall not be allowed to pass over the composite liner and leachate collection system in the north expansion fill area until at least 1.5 metres of waste has been placed over the leachate collection system and liner.

Leachate Treatment

4.46 Leachate generated at this Site shall be collected and treated as long as necessary following closure of this Site for protection of the natural environment. Leachate collection and treatment may be discontinued following written approval by the Director, based on consultation with the PRC and an application by the Owner to the Director with supporting documentation to confirm that leachate collection and treatment is no longer necessary, including monitoring results which indicate that the levels of contamination in the leachate have decreased to acceptable levels with respect to groundwater and surface water impacts.

Seepages

4.47 The Owner shall thoroughly inspect the landfill Site, at least once per month, for evidence of leachate seepage or leachate springs. Incidences of leachate breakout are to be reported monthly to the PRC and District Manager, and annually to the Regional Director in the Annual Report, together with a description of the remedial action taken.

Leachate Characterization

4.48 Upon commencement of landfilling in the north expansion fill area, the Owner shall conduct a leachate characterization study, based on representative samples of leachate obtained from the leachate collection systems, for the purposes of determining the current and projected leachate quality and quantity generated at this Site, and implementing an appropriate long-term leachate management plan for this Site. The results of the study shall be included in the Annual Report for this Site, as required by this Approval. Loadings to the Lindsay WPCP shall be closely monitored to determine the need for plant upgrades.

Leachate Disposal

4.49 Leachate from the leachate collection system shall be discharged to the Lindsay WPCP, unless prior approval of the Director is obtained for alternative leachate management and disposal.

Surface Water Management

4.50 Surface water and stormwater shall be managed in accordance with the stormwater management plan in the Design Report (Section 6.0) and the Maintenance & Operations Report (Section 4.1), Items 28(b) and 28(c) in Schedule "A", as amended by Items 35 and 37 in Schedule "A" attached to this Approval. Prior to construction of the works, the Owner shall submit an application and obtain approval an Approval (sewage works) for surface water management works, including the stormwater management pond.

4.51 During the detailed design stage, trigger levels for the stormwater management pond discharge shall be established for closing the pond outlet valve, based on existing water quality monitoring data and the Scugog River background information.

4.52 Stormwater runoff generated from the active waste fill area shall be considered contaminated and treated as leachate. Operational methods shall ensure that any precipitation falling onto active waste fill areas, not under final cover, shall be directed to the leachate collection system. If necessary, granular sumps shall be dug into the waste to facilitate drainage of contaminated stormwater towards the leachate collection system.

Additional Construction Requirements

4.53 (1) Groundwater monitors and landfill gas monitors shall be protected from potential damage during construction of the ancillary facilities.

(2) Erosion and sediment control measures, including silt fencing and flow check dams, shall be employed and function properly for the construction period. Installation of the erosion and sediment control measures shall be completed prior to commencement of construction. The measures shall be inspected regularly and maintained during construction and decommissioned once the site has been stabilized. Any problems that are found during inspections shall be rectified as soon as practicable. Accumulation of sediment in traps and along silt fences shall be cleared as required.

ON-SITE METEOROLOGICAL STATION

4.54. The Owner shall install an on-site meteorological station to measure weather conditions during the operating life of the Site. Ambient temperature (minimum, mean, maximum), precipitation events, barometric pressure and wind speed and direction shall be recorded daily. Data shall be used to confirm estimates of infiltration and leachate generation, and to correlate with any nuisance complaints and landfill gas monitoring data.

5.0 LANDFILL SITE OPERATIONS

Landfill

5.1 Except as otherwise provided for in this Approval, the Site shall be designed, developed, built, operated and maintained in accordance with the supporting documentation in Schedule “A”.

Waste Types

5.2 Only Municipal Waste shall be received for disposal at this Site. No hazardous

waste or liquid industrial waste, as defined in Reg. 347 as amended, shall be disposed of at this Site.

Burning of Waste

5.3 Burning of waste is not permitted at the Site.

Waste Placement

5.4 Final slopes above grade at the time of Site closure within the waste fill area shall be within the range of 4H:1V (25%) and 20H:1V (5%).

5.5 Waste placement shall occur at a minimum 1 meter above the highest groundwater table elevation at the Site

5.6 The Owner shall deposit waste in a manner that minimizes exposure area at the landfill working face and all waste shall be compacted before cover is applied.

Asbestos Waste

5.7 Any waste that is considered asbestos waste shall be handled in accordance with Section 17 of O. Reg. 347 as amended from time to time.

5.8 A suitable sized excavation for the asbestos waste shall be made by the Owner in a location away from the active landfilling face.

5.9 All asbestos waste shall be inspected to ensure that the asbestos waste is properly bagged or contained and free from puncture, tears or leaks.

5.10 The asbestos waste shall be placed in the excavation to avoid damage to the containers and to prevent dust and spillage.

5.11 Upon completion of the unloading and deposition of the asbestos in the excavation, at least 125 centimetres of cover or waste material shall be placed over the asbestos.

5.12 All asbestos waste shall be deposited to a level no higher that 1.25 metres below the general elevation of the disposal area to ensure that daily cover material removal in the future does not encounter the asbestos waste.

Cover Material

5.13 Daily, interim and final cover material shall be applied in accordance with the Operations and Maintenance Manual and as follows:

a. Daily Cover - By the end of each working day, the entire working face shall be compacted and covered with a minimum thickness of 150 mm of soil cover or an approved thickness of alternative cover material. Prior to placing waste at the start of the next operating day, the existing daily cover material shall be scarified or removed to ensure vertical hydraulic connection is maintained between layers of waste and to promote percolation of leachate downwards to the leachate collection system. The daily soil cover material shall be applied with appropriate wide-track or rubber tire equipment, not the waste compactor. Where weather conditions or operational problems prevent the daily application of cover material, the Owner shall immediately notify the District Manager and the PRC.

b. Interim Cover - In areas where landfilling has been temporarily discontinued for 3 months or more, a minimum thickness of 300 mm of soil

cover or an approved thickness of alternative cover material shall be placed and vegetated, as required.
c. Final Cover - Shall be applied progressively as areas of the landfill reach final waste elevations within the existing fill area, subject to Response #66 in Item 37 in Schedule "A", and within the north expansion fill area. All areas of final cover shall be graded and vegetated as soon as practically possible. The final soil cap shall be regularly inspected and maintained following application and during the post-closure period. Without limiting the above, the Owner shall ensure for a minimum of five years after completion of the cap that the Site shall be inspected at least on a quarterly basis to ensure that there is positive drainage along the cap and that during the frost free period of the first two years following completion, such inspections shall be monthly. If any inspection indicates that there is an area of ponding or zero slope, the Owner shall take all steps necessary to provide positive drainage and rehabilitate the final cap as soon as practically possible.

Alternative Daily and Interim Cover Material

5.14 (1) Alternative materials to soil may be used as daily and interim cover material, based on an application with supporting information and applicable fee for a trial use or permanent use, submitted by the Owner to the Director, copied to the District Manager and the PRC, and as approved by the Director via an amendment to this Approval. The alternative material shall be non-hazardous according to Reg. 347 and will be expected to perform at least as well as soil in relation to the following functions:

a. Control of blowing litter, odours, dust, landfill gas, gulls, vectors, vermin and fires;
b. Provision for an aesthetic condition of the landfill during the active life of the Site;
c. Provision for vehicle access to the active tipping face; and
d. Compatibility with the design of the Site for groundwater protection, leachate management and landfill gas management.

(2) The following materials are approved by the Director be used as Alternative Daily Cover (the material thickness with the exception of Item (f) and (i) must be 150 mm in thickness):

a. Soil;
b. Foundry sand;
c. Wood chips;
d. Compost;

e. Shingles;
f. Flexible Membranes (tarps, Enviro Cover); and
g. Blasting mats.
h Partially Composted leaf and yard waste from onsite composting
i Steel plates

(3) The Owner for Condition 5.14 (2) - Items (a), (b), (c) , (d) and (e) shall ensure that if material brought to the Site from outside the City of Kawartha Lake boundaries, no more than a 3 month supply of daily cover is stockpiled a the Site at any time. Any material from outside the boundaries of the Owner of Kawartha Lakes must be approved by the District Manager prior to receipt and reviewed by the PRC.
(4) The Owner shall ensure they have a supply of daily cover (soil) available should any of the alternative daily covers listed in Condition 5.16 (2) fail to meet required specifications outlined in this Approval.
(5) The Owner shall review with the PRC the effectiveness of the alternative daily cover every two (2) years.

Leachate Monitoring

5.15 Regular monitoring of leachate quantity and quality collected and discharged from the Site shall be conducted to allow the potential impact to the local receiving sewage treatment plant to be closely monitored and any necessary corrective action taken.

Cleaning Leachate Collection System (LCS)

5.16 The leachate collection system piping for the existing fill area and constructed portions of the north expansion fill area shall be cleaned out at least once per year with a high pressure wash, and with video inspections conducted to confirm that the pipes are clean and to determine the need for more frequent cleaning. Assessment of the need to amend the cleaning frequency shall be based on regular inspections of the leachate collection system and monitoring results. Inspection and maintenance of the leachate collection pipes, pumping station and forcemain shall be carried out in accordance with Sections 4.2.1 and 4.2.2 in the Maintenance & Operations Report, Item 28(c) in Schedule "A", and Response #72 in Item 35 in Schedule "A" attached to this Approval.

6.0 OTHER WASTE MANAGEMENT FACILITIES

Recycling Depot

6.1 The Recycling Depot shall be operated in accordance with Regulation 101/94, Part III - Municipal Waste Recycling Depots, Section 19.

6.2 The Owner may establish outdoor storage in bins, bunkers or trailers for the temporary storage of the following:

a. Construction and demolition waste including but not limited to wood, drywall, shingles, aggregate and porcelain;
b. Material destined for off-site reuse or recycling;
c. Textiles; and
d. Mattresses.

Leaf and Yard Waste Composting Facility

6.3 (1) The relocated Leaf and Yard Composting Facility shall be constructed, maintained and monitored in accordance with the Report listed as item No.76 (Stantec Report January 2015) as amended by items No. 78, 79, 80, 81, 83, 84 and 85 of the Schedule A of this Approval.

(2) The relocated Leaf and Yard Composting Facility shall be operated in accordance with Regulation 101/94, Part V - Leaf and Yard Waste Composting Sites, Sections 31 to 33.

(3) Notwithstanding any of the provisions in Section 31 to 33 of Part V of the Regulation 101/94, the Owner shall operate the relocated Leaf and Yard Composting Facility subject to the following Conditions;

a. The maximum amount of the Leaf and Yard waste at the relocated Leaf and Yard Waste Composting Facility (as shown on the drawing listed as item No. 77 of the Schedule A), at any time shall not be greater than 8000 tonnes.
b. Leaf and Yard waste segregated fine material may not be stored for more than four days before it is placed in windrows.
c. Leaf and Yard waste coarse material that is segregated for grinding shall be ground twice per year at a minimum unless agreed to by the District Manager.
d. The maximum quantity of the segregated coarse material at any time at the relocated Leaf and Yard Composting Facility shall not be greater than 750 tonnes.
e. On a trial basis, during three years, following the completion of the relocated leaf and yard composting facility construction, the temperature of each composting mass shall be measured and recorded weekly, at a minimum until the requirements in paragraphs 4 and 5 of Section 31 of Part V of the Regulation 101/94 have been satisfied. During the curing phase the temperature shall be measured and recorded weekly.

(4) The Owner shall prepare and submit a Report to the District Manager within 3 years following the completion of the relocated leaf and yard composting facility construction , providing results of the monitoring of the

relocated Leaf and Yard Composting Facility and compliance with Conditions 6.2(1), 6.2(2) and 6.2(3). The Report shall include at a minimum, the sampling analysis of the finished compost and document recommendations for continuation or amendment of Condition 6.2(3)(e).
(5) Approval is hereby granted for the construction and operation of the Infiltration Pond and a Valve Chamber to collect and treat the unsegregated and impacted storm water run off from the relocated compost pad in accordance with Items 94, 95 and 105 of Schedule "A".
(6) Water level in the Infiltration Pond shall be recorded on a weekly basis, at a minimum, using a staff gauge. Excess water from the Infiltration Pond shall be discharged via the Valve Chamber into Lagoon 1.
(7) Discharge of water via the spillway shall be minimized by managing the water level with the Valve Chamber. If an overflow does occur from the Infiltration Pond via the spillway, then the event shall be recorded and reported to the Ministry as part of the Annual Monitoring Report.

Septage Waste Drop Off Station

6.4. The manhole(s) for the septage waste drop-off station shall be covered at all times when not in use.

Household Hazardous Waste (HHW) Depot

6.5. (1) The HHW depot shall be built and operated in accordance with Items 52 and 53 of Schedule "A". Administrative amendments to Item 52 of Schedule "A" (i.e. HHW Depot Operations Manual) shall be submitted to the District Manager for approval.

(2) The operation of the HHW Depot is limited to the receipt and transfer of household hazardous waste consisting of classes 112, 113, 114, 122, 123, 135, 145, 146, 147, 148, 212, 213, 221, 232, 241, 242, 252, 261, 263, 269, 312 and 331 as defined in the "New Ontario Waste Classes" dated January 1986 or as amended.
(3) The HHW Depot may receive HHW during the maximum operating hours of 7:00 am. and 7:00 p.m. from Monday through Saturday.
(4) The total amount of liquid waste stored at the HHW Depot, at any one time, shall not exceed 5,000 litres (5 cubic metres) or equivalent.
(5) The total amount of solid waste stored at the HHW Deport, at any one time, shall not exceed 40 tonnes.
(6) No HHW shall be stored at the HHW Depot for a period longer than three (3) months without approval of the District Manager.

6.6 (1) The HHW depot shall not receive any pathological waste (class 312) other than syringes, lancets and needles.

(2) No radioactive wastes shall be accepted at the HHW depot.
(3) No PCBs (class 243) shall be accepted at the HHW depot. Oil and oil-

based paints which have been manufactured prior to 1972, or whose manufacturing date cannot be determined, may contain PCBs, and shall be handled in the following manner;

a. Oil and oil-based paints shall not be mixed or bulked with other paints prior to testing. Paints which are lab-packed are not considered to be mixed under this Approval.
b. The oil and oil-based paints shall be tested by a certified laboratory for PCB content. If the oil and oil-based paints are found to contain PCBs at or above levels identified in subcondition 6.5 (c)(iii), it shall be forthwith reported to the District Manager and the PCB waste shall be managed in accordance with Regulation 362/92 and stored or removed from the HHW depot to an approved PCB storage site, in accordance with written instructions from the District Manager.
c. The oil and oil-based paints shall not be distributed for reuse if they have any measurable PCB content. The oil and oil-based paint is considered to be a PCB waste, if measured levels are equal to or greater than 50 parts per million.

(4) Except as specified in subcondition 6.5 (c)(iii), paints collected at the HHW depot may be returned or sold to the general public for reuse provided all transactions are recorded by invoice. Information on the type and volume of paint returned to the public through this HHW depot shall be recorded in a log book kept at the HHW depot.
(5) The Owner shall maintain a log book at the HHW depot which shall record, on each day of operation:

a. date of record;
b. types, quantities and source of waste received;
c. quantities of waste stored at the Depot;
d. quantities and destination of waste shipped from the Depot;
e. quantities of paints returned or sold to the general public;
f. results of routine, visual inspection of the Depot; and
g. any reporting of spills or upsets and actions taken to contain and manage.

6.7 (1) The HHW Depot shall only operate when under the supervision of staff trained in accordance with Item 52 of Schedule "A", the HHW Depot Operations Manual.
(2) Sufficient numbers of drums and lab-packed containers shall be available at the HHW depot such that all HHW, in quantities unanticipated or otherwise, can be safely stored.

(3) The Owner shall ensure that the waste are properly handled, packaged, contained or stored in a safe and secure manner so as not to pose any threat to the general public, site personnel and the natural environment, and that the operation of this HHW depot does not interfere with any other activities associated with this waste disposal Site.
(4) Emergency response in the event of a spill or upset shall be undertaken in accordance with Item 52 of Schedule "A", the HHW Depot Operations Manual. This Manual shall be kept at the HHW depot at all times and made easily accessible to all staff.
(5) The Owner shall ensure that all contingency and emergency response equipment and materials are immediately available at the HHW depot at all times, in a good state of repair and fully operational.
(6) The Owner shall conduct routine, visual inspections of the entire HHW depot area to unsure its security and to minimize off-site impacts such as odour, dust, litter and other nuisance factors.

6.8 Within four (4) months of the scheduled closure of the HHW depot, the Owner shall submit a detailed Closure Plan for approval by the Director. The Plan shall include, as a minimum, description of the work required to close the HHW depot, schedule of works and decommissioning of the HHW area.

7.0 RECORD KEEPING

7.1 The Owner shall ensure that daily records of Site operations are made for each operating day during the operation of the Site, in accordance with Section 6.10 in the Maintenance & Operations Report, Item 28(c) in Schedule "A", and that the records are retained at the Site for at least two years after they are made.

7.2 Daily records shall be maintained at the Site in a log book and shall include:

a. the type, date and time of arrival, hauler, and quantity (tonnes) of all waste and cover material received at the Site, and of all waste refused by the Site;
b. the area of the Site in which waste disposal operations are taking place;
c. any complaints from the public received by the Owner concerning landfilling operations and a description of the action taken by the Owner in response;
d. the amount of any leachate removed, or treated and discharged from the Site;
e. a record of litter collection activities and the application of dust suppressants;
f. a record of the inspections of any control, treatment, disposal or monitoring facilities; and
g. a description of any out-of-service period of any control, treatment, disposal or monitoring facilities, the reasons for the loss of service, and

action taken to restore and maintain service.

Record Retention

7.3 The Owner shall retain all documentation listed in Schedule “A” for as long as this Approval is valid.

7.4 The Owner shall retain employee training records as long as the employee is working at the Site.

7.5 The Owner shall make all of the above documents available for inspection upon request of Ministry staff.

8.0 COMPLAINTS PROCEDURE

8.1 The Owner, in conjunction with the PRC, shall establish a public complaints response procedure for the landfill Site, based on Section 10.1 in the Operations and Maintenance Manual. The Owner shall establish and publicise a day time and after hours telephone number for complaints about the operation and maintenance of the landfill Site. The Owner shall be responsible for responding to a complaint in accordance with the public complaints response procedure.

9.0 EMERGENCY SITUATIONS

9.1 In the event of a fire or discharge of a contaminant to the environment, Site staff shall contact the MECP Spills Action Centre (1-800-268-6060) and the District Office of the MECP.

9.2 The Owner shall submit to the District Manager a written report within three (3) days of the spill , outlining the nature of the incident, remedial measures taken and measures taken to prevent future occurrences at the Site.

9.3 The Owner shall have a Emergency Response Procedures Manual at the Site and shall be available for inspection by Ministry staff.

9.4 The Owner shall ensure that adequate fire extinguishers and contingency spill clean up equipment is available and that emergency response personnel are familiar with its use and location.

10.0 ENVIRONMENTAL MONITORING

Groundwater Wells/Monitors

10.1. The Owner shall ensure that all groundwater monitoring wells which form part of the monitoring program shall be properly capped, locked and protected from damage.

10.2. Where landfilling is to proceed around monitoring wells, suitable extensions shall be added to the wells, and the wells shall be properly re-secured and protected.

10.3. Any groundwater monitoring wells included in the ongoing monitoring program that are damaged shall be assessed, repaired, replaced or decommissioned by the Owner, as required.

10.4. The Owner shall repair or replace any monitoring well which is destroyed or in any way made to be inoperable for sampling, but still required as part of the monitoring program, such that no more than one regular sampling event is missed.

10.5. All monitoring wells which are no longer required as part of the groundwater monitoring program, and have been approved by the District Manager for abandonment, shall be decommissioned by the Owner, as required, in accordance with

Ontario Regulation 903. A report on the decommissioning of the well shall be included in the Annual Report for the reporting period during which the well was decommissioned.

Environmental Monitoring Programs

10.6. The Owner shall carry out monitoring programs for waste, groundwater, leachate, surface water, and landfill gas, as described in the Operations and Maintenance Manual, as summarized in Schedules "B", "C", "D", "E" and "F" attached to this Approval, and in accordance with any related other Approval approvals issued for this Site. The Owner shall ensure that any proposed changes to the monitoring programs under this Approval shall be acceptable to the District Manager before applying for an amendment to the Director for Approval.

10.7 Leachate heads acting on the composite liner in the north expansion fill area shall be monitored three (3) times per year using vibrating wire piezometers (VWPs) installed on the liner surface at eight locations shown on Map 7-2, Proposed Leachate Monitoring Locations, Golder Associates, September 2001 (Item 37(a) in Schedule "A"). If failure of a vibrating wire piezometer (shown on Map 7-2, Proposed Leachate Monitoring Locations, dated September 2001 - Item 37 in Schedule "A") is detected within the contaminating life span of the landfill, it shall be replaced with a slotted PVC standpipe installed through the waste, or another device or method acceptable to the Director.

10.8 Any off site exceedances of parameters for groundwater, surface water, or odour shall be reported to the District Manager within seven (7) days of receiving laboratory test results that indicate an exceedance. In addition, a statement detailing which results are out of compliance with the Ministry's guidelines and objectives shall be provided at the same time as the results.

Compliance Criteria

10.9 The Site shall be operated in such a way to ensure compliance with the MOE's Guideline B-7 Reasonable Use Concept at monitoring points along the property line that have the potential to be impacted by leachate from the Site.

Leachate Collection and Disposal System Monitoring and Recording

The Owner shall carry out the following monitoring program for the LCDS:

10.10 All samples and measurements taken for the purposes of this Approval are to be taken at a time and in a location characteristic of the quality and quantity of leachate over the time period being monitored.

10.11 Samples shall be collected at sampling points, at the frequency specified, by means of the specified sample type and analyzed for each parameter listed in Tables 1 and 2 of Schedule G of this Approval and all results shall be recorded.

10.12 The methods and protocols for sampling leachate, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

a. The Ministry's Procedure F-10-1, “Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid

Waste Streams Only)", as amended from time to time by more recently published editions;
b. The Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions; and
c. The publication "Standard Methods for the Examination of Water and Wastewater" (21st edition), as amended from time to time by more recently published editions.

10.13 The Owner shall install and maintain (a) flow measuring device(s), to measure the flow rate of leachate from the LCDS with an accuracy to within plus or minus 15 per cent (+/- 15%) of the actual flow rate for the entire design range of the flow measuring device in order to measure and record:

a. The quantity of leachate being conveyed through Leachate Pumping Station No.1;
b. The quantity of leachate being conveyed through the Leachate Pumping Station No.2; and
c. The quantity of sewage being conveyed through the Sewage Pumping Station.

10.14 The Owner shall retain for a minimum of three (3) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by Conditions 10.10 through 10.13 of this Approval.

11.0 TRIGGER MECHANISMS AND CONTINGENCY PLANS

11.1. In the event of a confirmed exceedance of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate, the Owner shall immediately notify the District Manager, and an investigation into the cause and the need for implementation of remedial or contingency actions shall be carried out by the Owner in accordance with the approved trigger mechanisms and associated contingency plans described in the Design Report (Sections 11 and 12) and the Maintenance & Operations Report (Section 7), Items 28(b) and 28(c) in Schedule "A", as amended in Items 7 and 35 to 37 in Schedule "A" attached to this Approval.

11.2. The Owner shall ensure that any proposed changes to the site-specific trigger levels for groundwater and surface water impacts due to leachate shall be approved in advance by the Director via an amendment to this Approval.

11.3 If monitoring results, investigative activities and implementation criteria indicate the need to implement contingency measures, the Owner shall ensure that the following steps are taken:

a. The Director, District Manager and PRC shall be notified by the Owner as soon as possible of the need to implement contingency measures;
b. Detailed plans, specifications and descriptions for the design, operation

and maintenance of the contingency measures shall be prepared and submitted by the Owner to the Director for approval; and
c. The contingency measures shall be implemented by the Owner upon approval by the Director.

12.0 ADDITIONAL STUDIES

Landfill Assessment and Wetland Impact Study

12.1 Study B in the Landfill Assessment and Wetland Impact Study, Item 21(b) in Schedule "A", shall be reviewed and updated by the Owner every 5 years, starting in 2003, and included with the Annual Report for the Site.

12.2 Commencing 2023, the Owner shall conduct aquatic lethality testing at SW13 and wastewater pollution control plant (WPCP) four times a year in addition to the implementation of existing surface water monitoring program. The changes in the frequency of aquatic lethality testing can be made after District Manager's approval.

12.3 A discharge estimate of the daily flow entering the Scugog River shall be made at SW3, SW13 and WPCP to determine loading using parameter concentration data obtained under condition 10.6.

12.4 The technical data and its analysis collected under conditions 12.2 and 12.3 shall be included in the annual monitoring report required under condition 15.

13.0 PUBLIC REVIEW COMMITTEE (PRC)

13.1 The Owner shall forthwith take all reasonable steps to maintain and participate in a landfill Public Review Committee (PRC), which is to function within terms of reference for the PRC, as prepared in consultation with the interested members of the affected public, and as amended from time to time according to appropriate amending procedures. The PRC shall serve as a focal point for dissemination, consultation, review and exchange of information regarding the operation of the landfill Site, including environmental monitoring, maintenance, complaint resolution, and new approvals or amendments to existing approvals related to the operation of this landfill Site.

13.2 The membership of the PRC shall include at least one member from the Owner and at least two members from interested parties.

13.3 Copies of all reports or other submissions required by the conditions of this Approval shall be made available to the PRC in accordance with the deadlines specified in the Conditions.

13.4 The Owner shall provide to members of the PRC and to any neighbouring residents reasonable notice and opportunities to make comments regarding any proposed amendment to this Approval. The Owner shall forward to the Director for consideration any written comments received by the Owner and advise the Director of the essence of any verbal comments received by the Owner regarding such proposed amendment.

14.0 SITE STAFF TRAINING PLAN

14.1 The Owner shall develop and maintain a training plan for current and new Site operations employees and shall ensure that all Site operations employees have been

adequately trained and receive on-going training with respect to the following, as amended:

a. Terms, conditions and operating requirements of this Approval;
b. The operation, inspection, and maintenance of the Site with respect to the approved design and operations documents;
c. Relevant waste management legislation and regulations;
d. Environmental concerns related to waste management at the Site;
e. Occupational health and safety concerns related to waste management at the Site; and
f. Emergency procedures and contingency plans in cases of fire, spills, off-site impacts and any other emergency situations.

15.0 ANNUAL REPORT

15.1 The Owner shall prepare an Annual Report on the development, operations and monitoring of the Site. The report shall be submitted to the Regional Director, the District Manager and the PRC, by **April 30** each year, and shall cover the preceding calendar year. The report shall include the following:

a. The results and an interpretive analysis of the results of all leachate, groundwater, surface water, landfill gas and biology monitoring, including an assessment of the need to amend the monitoring programs and trigger mechanisms or to implement contingency measures. This will include a discussion on the monitoring parameters and locations required by the Approval and the deletion of any parameter or location. In addition, this will include a discussion on the analyse(s) and location(s) on any additional sampling parameter(s) and/or sampling location(s) in which the Owner completed that is not currently required by this Approval.
b. Mapping of concentrations of chloride, ammonia-N, phosphorus, toluene and phenols in the upper bedrock aquifer and estimates of contaminant mass loadings to the Scugog River from the landfill via leachate migration and from the WPCP lagoons through the upper bedrock aquifer, for chloride, ammonia-N, phosphorus, toluene and phenols, based on Response #98 in Items 35 and 37 in Schedule "A";
c. Review and assessment of the effectiveness of the gull control program, including the following information:

i. Implementation and status of habitat management activities;
ii. Implementation and effectiveness of active control measures;
iii. Summaries of gull activity at the landfill Site;
iv. Monthly summaries of the number and species of gulls shot for the lethal gull control program;
v. Documentation of complaint records and actions taken in

response;
vi. Status of required permits; and
vii. Changes undertaken, or required, to improve the effectiveness of the gull control program.

d. An assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the Site, and the adequacy of and need to implement the contingency plans;
e. submission of the WPCP data as an appendix to the landfill annual report;
f. an assessment of the discharge from SW3, SW13 and the WPCP on water quality in the Scugog River, particularly Embayment A using interpretive or modelling tools;
g. Site plans showing the existing contours of the Site; areas of landfilling operation during the reporting period; areas of intended operation during the next reporting period; areas of excavation during the reporting period; the progress of final cover, vegetative cover, and any intermediate cover application; the progress of liner placement and leachate collection system placement; previously existing site facilities; facilities installed during the reporting period; and site preparations and facilities planned for installation during the next reporting period;
h. Calculations of the volume of waste, daily and intermediate cover, final cover, and liner and leachate collection system material deposited or placed at the Site during the reporting period and a calculation of the total volume of Site capacity used during the reporting period;
i. A calculation of the remaining capacity of the Site and an estimate of the remaining Site life;
j. A summary of wastes accepted and transferred off site for recycling or reuse.
k. A summary of the quantity of any leachate or pre-treated leachate removed from the Site or leachate treated and discharged from the Site during each operating week;
l. Summaries of the monthly, maximum daily (as available), and total annual quantity (tonnes) of waste received at the Site;
m. A summary of any public complaints received by the Owner and the responses made;
n. A discussion of any operational problems encountered at the Site and corrective action taken;
o. The status of compliance with all conditions of this Approval, including the inspection, monitoring and reporting requirements in the conditions of this Approval;

p. Any other information with respect to the Site which the Regional Director or District Manager may require from time to time; and
q. A discussion of any operational or performance issues related to the use of alternative daily cover at the Site.

16.0 SITE CLOSURE PLAN

16.1 The low permeability final cover system for the completed south area of the landfill shall be completed in accordance with Item 48 in Schedule "A".

16.2 At least two (2) years prior to the anticipated date of closure of this Site or the date 90 per cent of the total waste disposal volume is reached, whichever occurs first, the Owner shall submit to the Director for approval, with copies to the District Manager and the PRC, a detailed Site Closure Plan pertaining to the termination of landfilling operations at this Site, post-closure inspection, maintenance and monitoring, and end use, based on Section 13 in the Design Report and Section 9 in the Maintenance & Operations Report, Items 28(b) and 28(c) in Schedule "A", as amended by Items 35 to 37 in Schedule "A". The plan shall include the following:

a. A plan showing Site appearance after closure;
b. A description of the proposed end use of the Site;
c. Descriptions of the procedures for closure of the Site, including:

i. Advance notification of the public of the landfill closure;
ii. Posting of a sign at the Site entrance indicating the landfill is closed and identifying any alternative waste disposal arrangements;
iii. Completion, inspection and maintenance of the final cover and landscaping;
iv. Site security;
v. Removal of unnecessary landfill-related structures, buildings and facilities; and
vi. Final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;

d. Descriptions of the procedures for post-closure care of the Site, including:

i. Operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
ii. Record keeping and reporting; and

iii. Complaint contact and response procedures;

e. An assessment of the adequacy of and need to implement the contingency plans for leachate and landfill gas; and
f. An updated estimate of the contaminating life span of the Site, based on the results of the monitoring programs to date.

SCHEDULE "A"

This Schedule "A" forms part of this Approval. If there is a conflict between documents listed in Schedule “A”, the document bearing the most recent date shall apply:

Selected Supporting Documentation - Interim Expansion

1. Hydrogeological Investigation and Design Plan of a Proposed Sanitary Landfill, Lot 26, Concession 6, Township of Ops, prepared by Hydrology Consultants Limited, dated August 1978.
2. Surface Water Quality Assessment Report, prepared by Senes Consultants Limited, dated March 1991.
3. Biological Assessment Report, prepared by Totten Sims Hubicki Associates, dated September 1991.
4. Survey attached to letter from W. R. Coe, William R. Coe Limited, to J. Tidball, Miller Thomson, dated December 2, 1991.
5. Supplementary Report [Hydrogeology], Town of Lindsay/Township of Ops Interim Landfill Expansion, prepared by Hydroterra Limited, dated May 1993.
6. Leachate Impact on Township of Ops Sewage Treatment Plant, prepared by Totten Sims Hubicki Associates, dated May 1993.

Conceptual Purge Well System (approved June 24, 1994)

7. Document entitled CONCEPTUAL PURGE-WELL SYSTEM, dated February 2, 1994, included as an attachment to the LINDSAY-OPS LANDFILL INTERIM EXPANSION HEARING Outline of Evidence of Leon Bryck and Bob Kearse , shown as Exhibit Number 33 at the Environmental Assessment Board hearing, including Figure entitled Town of Lindsay Lindsay-Ops Landfill Site Conceptual Bedrock Purge Well System, dated February 1994, shown as Exhibit Number 33(a) at the Environmental Assessment Board hearing.

Expansion of the Leachate Collection System (approved January 25, 1995)

8. Document entitled "Lindsay/Ops Landfill Site Leachate Collection System Expansion", dated September 1994 and prepared by Totten Sims Hubicki Associates.
9. Drawing No. G1 (Legend and Abbreviations), dated October 20, 1994 and prepared by Totten Sims Hubicki Associates.
10. Drawing No. P1 (Leachate Collector and Forcemain), dated October 20, 1994 and prepared by Totten Sims Hubicki Associates.
11. Drawing No. P2 (Leachate Collector - Profile), dated October 20, 1994 and prepared by Totten Sims Hubicki Associates.
12. Drawing No. P3 (Leachate Collector - Profile), dated October 20, 1994 and

prepared by Totten Sims Hubicki Associates.
13. Drawing No. D1 (Details), dated October 20, 1994 and prepared by Totten Sims Hubicki Associates.
14. Letter from I. Parrott, Ministry of Environment and Energy to S. Blakey, Totten Sims Hubicki Associates, dated December 5, 1994, re: Review Comments on Leachate Collection System.
15. Letter from S. Blakey, Totten Sims Hubicki Associates to I. Parrott, Ministry of Environment and Energy, dated December 6, 1994, re: Response to Ministry Review Comments of December 5, 1994.
Eastward Extension to Existing Shallow Leachate Collection System along South Side of Landfill Site (approved February 29, 1996)
16. Letter dated December 27, 1995, from S. J. Blakey of Totten Sims Hubicki Associates to D. Staseff of MOEE Approvals Branch, including:
a. Tender Documents dated December 1995.
b. Drawing No. G1 entitled "Leachate Collection System - Legend and Abbreviations", dated December 1995.
c. Drawing No. 1 entitled "Leachate Collector - Profile", dated December 1995.
d. Drawing No. 2 entitled "Leachate Collector - Profile", dated December 1995.
e. Application for Approval of a Waste Disposal Site, signed by P. Jeffrey Seaton, County Engineer, County of Victoria, dated December 19, 1995.
17. Letter dated January 4, 1996 from D. Staseff of MOEE Approvals Branch to S. J. Blakey of Totten Sims Hubicki Associates - comments on design.
18. Letter dated January 11, 1996 from S. J. Blakey of Totten Sims Hubicki Associates to D. Staseff of MOEE Approvals Branch - response to comments on design.
19. Letter dated January 30, 1996 from S. J. Blakey of Totten Sims Hubicki Associates to D. Staseff of MOEE Approvals Branch, including revised Tender Document, Section 11200, Page 3.
20. Letter dated February 2, 1996 from S. J. Blakey of Totten Sims Hubicki Associates to D. Staseff of MOEE Approvals Branch, including revised Drawing No. D1 entitled "Details".
Landfill Assessment and Wetland Impact Study (February 1996)
21. Report entitled "Landfill Assessment and Wetland Impact Study, Lindsay/Ops Landfill", prepared by Golder Associates Limited, dated February 1996, including:
a. Study A - Hydrogeological Assessment of Lindsay/Ops Landfill.
b. Study B - Assessment of Impacts from Lindsay/Ops Landfill and Lindsay WPCP on Surgen Lake Wetland and Scugog River.
Contaminant Attenuation Zone (approved March 8, 1999)
22. Property description and legal survey Plan 57R-7810, dated June 19, 1997, attached to letter dated February 23, 1999, from W. Abbott, P. Eng., County of Victoria, to D. Staseff, P. Eng., Ministry of the Environment.
23. Letter dated September 30, 1998, from W. Abbott, P. Eng., County of Victoria, to A. Dominski, Ministry of the Environment.
24. Application for Approval of a Waste Disposal Site, signed by W. Abbott, P. Eng.,

Waste Management Engineer, County of Victoria, dated September 30, 1998.
25. Letter dated September 22, 1998, from S. Richardson, Clerk-Treasurer, Corporation of the Township of Ops, to W. Abbott, County of Victoria.
26. Letter dated February 23, 1999, from W. Abbott, P. Eng., County of Victoria, to D. Staseff, P. Eng., Ministry of the Environment.

Approval under the *Environmental Assessment Act*

27. Order in Council dated May 31, 2000, and *Environmental Assessment Act* , Section 9, Notice of Approval to Proceed with the Undertaking, Re: An Environmental Assessment for the Provision of Long Term Waste Disposal Capacity for the County of Victoria - specifically with respect to those matters that are subject to Part V of the *Environmental Protection Act* and for the purposes of Section 12.2(2) in the *Environmental Assessment Act* .

Application under Part V *Environmental Protection Act* for Continued Use & North Expansion

28. Letter and Application for a Certificate of Approval under Part V of the *Environmental Protection Act* for the Continued Use and North Expansion of the Lindsay-Ops Landfill (MOE Ref. #3722-4NPK9T), signed by David Moy, Corporation of the County of Victoria, dated August 25, 2000, including the following supporting documentation dated July 2000 (except were noted otherwise):

a. **EPA Summary Report** , prepared by Earth Tech Canada Inc.
b. **Design Report** , prepared by Earth Tech Canada Inc.
c. **Maintenance & Operations Report** , prepared by Earth Tech Canada Inc.
d. **Hydrogeological / Geotechnical Assessment Reports** :

i. Preliminary Modelling for Lindsay/Ops Landfill Expansion - Golder Associates Ltd., June 16, 1998.
ii. Evaluation of Native Till as Potential Landfill Liner Material, Lindsay/Ops Landfill - Golder Associates Ltd., July 1998.
iii. Estimation of Ammonia-N Loadings Due to Leakage from the Sewage Lagoon System, Lindsay/Ops Landfill Site - Golder Associates Ltd., December 1998.
iv. Trial Soil Liner Construction, Lindsay/Ops Landfill Expansion Study - Golder Associates Ltd., July 21, 1999.
v. Letter report dated November 19, 1999 from Frank Barone, Golder Associates Limited, to Julie Preslie, County of Victoria, Re: Revised "Trigger Mechanism", Lindsay/Ops Landfill.
vi. Geotechnical Assessment of the Proposed Cover System for the Existing Lindsay/Ops Landfill - Golder Associates Ltd., February 18, 2000.
vii. Leachate Generation Rates, Proposed Lindsay/Ops Landfill Expansion - Golder Associates Ltd., February 22, 2000.

viii. Estimated Quantity and Quality of Groundwater Collected from the Proposed Contingency Groundwater Purge Well System, Lindsay/Ops Landfill - Golder Associates Ltd., March 17, 2000.
iv. Hydrogeological Conditions and Assessment of Ammonia-N Loadings, Proposed Lindsay/Ops Landfill Expansion - Golder Associates Ltd., June 2000, including Appendix A - Site Specific Analysis of Leachate Collection System Service Life [200 years].

e. **Agricultural Study** , prepared by Stovel and Associates Inc.
f. **Air Quality Impact Assessment** , prepared by Earth Tech Canada Inc.
g. **Archaeology Assessment** , prepared by Heritage Quest Inc. (revised July 13, 2000).
h. **Bird Hazard Assessment** , prepared by Jacques Whitford Environment Limited.
i. **Leachate Disposal Study** , prepared by Earth Tech Canada Inc.
j. **Natural Environment Assessment** , prepared by Earth Tech Canada Inc.
k. **Noise Impact Assessment** , prepared by Aercoustics Engineering Limited (revised July 25, 2000).
l. **Surface Water Assessment / Stormwater Management Plan** , prepared by Earth Tech Canada Inc.
m. **Traffic Assessment** , prepared by Earth Tech Canada Inc.
n. **Visual Impact Assessment** , prepared by Earth Tech Canada Inc.

Gull Control

29. Letter dated September 26, 2000, from Greg Taras, Greg Taras Planning Consultants Ltd., to David Staseff, Ministry of the Environment, Re: **Wildlife Control Program** for the Continued Use and North Expansion of the Existing Lindsay-Ops Landfill, including:
a. Attachment "A" - Letter dated September 19, 2000, from Ron Huizer, Jacques Whitford Environment Limited, to David Moy, County of Victoria, Re: Lindsay-Ops Landfill Wildlife Control Program - Work Plan.
b. Attachment "B" - Letter dated September 15, 2000, from David Moy, County of Victoria, to Anne Mehnart, Lindsay Airport Authority, Re: Wildlife Awareness & Control Program for Lindsay Airport.
30. Final Report, Owner of Kawartha Lakes, Continued Use & North Expansion of the Lindsay-Ops Landfill, **Gull Control Program** , prepared by Jacques Whitford Environment Limited, dated September 2001.

Slope Modifications

31. Letter dated February 9, 2001, from Joe Ovcjak, Earth Tech Canada Inc., to Dave Staseff, Ministry of the Environment (response to letter dated February 1, 2001, from Dave Staseff, Ministry of the Environment, to Greg Taras, Greg Taras Planning

Consultants Ltd.), including:
a. Drawing No. A1-99252-G1, entitled "Revised Final Contour Plan (2001), Existing Lindsay-Ops Landfill", dated February 2001.
b. Drawing No. A1-99252-G2, entitled "Cross Section A-A' and B-B' Plan, Existing Lindsay-Ops Landfill", dated February 2001.
32. Letter dated March 15, 2001, from J. J. Ovcjak, Earth Tech Canada Inc., to D. Staseff, Ministry of the Environment, Re: Proposed Slope Modifications, Lindsay-Ops Landfill Site (response to letter dated March 2, 2001, from Dave Staseff, Ministry of the Environment, to Joe Ovcjak, Earth Tech Canada Inc.), including attached letter dated March 9, 2001, from Frank S. Barone, Golder Associates Limited, to Joe Ovcjak, Earth Tech Canada Inc., Re: Proposed Slope Modifications, Lindsay-Ops Landfill Site.
33. Letters dated April 2 & 17, 2001, from Julie Preslie, Owner of Kawartha Lakes, to Dave Staseff, Ministry of the Environment, Re: Proposed Slope Modifications, Lindsay-Ops Landfill Site, including attachments re: public consultation pursuant to Condition 7 in Certificate of Approval No. A321504 (dated June 24, 1994).
Name Change - Owner of Kawartha Lakes
34. Letter dated March 6, 2001, from Julie Preslie, Owner of Kawartha Lakes, to Dave Staseff, Ministry of the Environment, Re: Confirmation of Amalgamation and Name Change (County of Victoria to Owner of Kawartha Lakes), including attachment (copy of May 6, 2000 edition of Ontario Gazette - Order of the Commission made under the *Municipal Act* , R.S.O. 1990, c. M. 45 re: County of Victoria).
EPA Application - Responses to MOE Comments
35. Letter dated May 2, 2001, from P. Jeffrey Seaton, Owner of Kawartha Lakes, to Dave Staseff, Ministry of the Environment, Re: Response to MOE Comments [January 19, 2001, February 1, 2001, and March 19, 2001] re: Part V EPA Application for Continued Use & North Expansion of the Lindsay-Ops Landfill, Owner of Kawartha Lakes, including binder with Responses to MOE Comments (pages 1 to 78) and the following attachments:
a. Attachment A - Existing Lindsay-Ops Landfill Perimeter Leachate Collection System Design Drawings.
b. Attachment B - Estimated Service Life of the Existing Perimeter Leachate Collection System for the Existing Lindsay-Ops Landfill, Golder Associates Ltd., April 17, 2001.
c. Attachment C - Legal Survey of Properties (5) Purchased by the Owner of Kawartha Lakes & Compiled Plan of Landfill Property.
d. Attachment D - Settlement Calculations for North Slope, Golder Associates Ltd., April 17, 2001.
e. Attachment E - Inclinometer Locations and Settlement Monitoring for Common North Slope, Golder Associates Ltd. - Figure E-1: Location of Settlement Plates over the North Slope of the Existing Landfill (March 2001), Figure E-2: Installation Detail for Settlement Plates on the North Slope of the Landfill (March 2001), Figure E-3: Typical Schematic of Inclinometer Installation along North Slope (February 2001).
f. Attachment F - Owner of Kawartha Lakes Council Resolution No. CW2001-123 Identifying Contaminant Attenuation Zone.

g. Attachment G - Figure G-1: Conceptual Design of a Contingency Leachate Purge Well for the Expansion Area of the Landfill, Golder Associates Ltd., February 2001.
h. Attachment H - Conceptual Design Calculations for Leachate Purge Wells in the Landfill, Golder Associates Ltd., April 17, 2001.
i. Attachment I - Figure 2: Regional Cross-Section A-A', Ops Township, Victoria County, Golder Associates Ltd., February 2000.
j. Attachment J - Figure J-1: Variation in Ammonia-N Source Concentration With Time - Landfill Expansion Area, Golder Associates Ltd., April 2001.
k. Attachment K - Groundwater Flow Direction and Monitoring Locations - Figure K-1: Overburden Groundwater Flow Direction (October 1999), Figure K-2: Upper Bedrock Groundwater Flow Direction (October 1999), Golder Associates Ltd., April 2000.
l. Attachment L - Impacts of Projected Leachate Loadings on the Lindsay Water Pollution Control Plant Aeration Requirements: Sample Calculations for Aerator Preference & Power Requirements for Mixing, Tables 4-1b.1 & 4-1b.2 (revised), "Projected Leachate Loadings - Impact on the WPCP", Earth Tech Canada Inc., March 2001.
m. Attachment M - Revised Maps and Figures from the Part V EPA Application (August 2000) for the Continued Use and Northerly Expansion of the Existing Lindsay-Ops Landfill Site, Earth Tech Canada Inc., March 2001:
Design Report

Map 1-1 Site Location Plan
Map 1-2 Surrounding Land Use
Map 2-1 Property Plan
Map 2-2 Existing Site Conditions (November 2000)
Map 4-1 Features of the Proposal
Map 4-2 Initial Cell Development Plan
Map 4-3 Cell 2 Development Plan
Map 4-4 Cell 4 Development Plan
Map 4-5 Proposed Base Contours
Map 4-6 Proposed Final Contours
Figure 4-1 Typical Cross Sections of Fill Area
Figure 4-2 Cross Sections and Anchor Trench Details
Map 6-1 Existing Stormwater Ditches and Catchment Areas
Map 6-2 Final Stormwater Ditches, Catchment Areas and Surface Water Monitoring Locations
Map 6-3 Proposed Stormwater Facility Conceptual Design
Map 7-1 Existing Leachate Management System
Map 7-2 Proposed Leachate Management System
Figure 7-1 Leachate Underdrain Pipe and Landfill Base Details
Figure 7-2 Leachate Manhole and Sidewall Detail

Map 9-1 Landfill Gas Management and Monitoring System
Figure 9-1 Typical Gas Vent Trench and Gas Monitoring Probe
Map 11-1 Existing and Proposed Groundwater Monitoring Well Locations Adjacent to the Landfill Expansion Area (Monitoring Plan for Landfill Expansion Area) - Golder Associates Ltd.
Maintenance & Operations Report
Map 7-4 Scugog River Surface Water Sampling Locations

36. Letter dated May 9, 2001, from Julie Preslie, Owner of Kawartha Lakes, to Dave Staseff, Ministry of the Environment, Re: Response to MOE Comments re: Part V EPA Application for Continued Use & North Expansion of the Lindsay-Ops Landfill (corrected page 31).
37. Letter dated September 17, 2001, from Stan Irwin, Owner of Kawartha Lakes, to Dave Staseff, Ministry of the Environment, Re: Response to Additional MOE Comments [August 27, 2001] on The Owner of Kawartha Lakes Application for a Certificate of Approval Under Part V of the Environmental Protection Act for the Continued Use and Expansion of the Lindsay-Ops Landfill, including responses to MOE comments (pages 1 to 9) and the following attachments:
a. Revised Map 7-2: Proposed Leachate Monitoring Locations, Golder Associates Ltd., September 2001.
b. Manhole Penetration Detail 'A', Urban & Environmental Management Inc., September 2001.
38. Report entitled, *"Detailed Design for Cell 1 Base Liner and Leachate Collection System and Overview of Future Design Submissions - Lindsay-Ops Landfill Expansion"* , prepared by Gartner Lee Ltd., in association with Golder Associates and TSH, dated August 2002, including:
Detailed Design Drawings
1. Existing Conditions - Rev. 1 - Aug 07/02
2. Facility Layout - Rev. 1 - Aug 07/02
3. Site Preparation - Rev. 1 - Aug 07/02
4. Grading Plan - Cell 1 - Base Excavation - Rev. 1 - Aug 07/02
5. Grading Plan - Cell 1 - Top of Clay Liner - Rev. 1 - Aug 07/02
6. Grading Plan - Cell 1 - Leachate Collection System Layout - Rev. 1 - Aug 07/02
7. Grading Plan - Cell 1 - Top of Leachate Collection Granular Blanket - Rev. 1 - Aug 07/02
8. Typical Sections and Details - Rev. 1 - Aug 07/02
9. Typical Sections and Details - Rev. 2 - Aug 22/02
10. Typical Sections and Details - Rev. 1 - Aug 07/02
11. Manhole 1 and 2 Details - Rev. 1 - Aug 07/02
Appendices
A. *Report on Geotechnical and Hydrogeological Data/Analyses for the Detailed Design*

of the Lindsay/Ops Landfill Expansion [Cell 1] , prepared by Golder Associates Ltd., dated August 2002.
B. *Cell 1 Base Liner and Leachate Collection System Construction Specifications* , prepared by Gartner Lee Ltd., dated August 8, 2002.
39. Letter dated September 27, 2002 from Mark Sungaila, P. Eng., Gartner Lee Ltd., to Dave Staseff, P. Eng., Ministry of the Environment, Re: Response to MOE Comments [September 25, 2002] on Detailed Design of Cell 1, Lindsay-Ops Landfill Site, Certificate of Approval No. A321504.
40. Letter dated September 27, 2002 from Frank Barone, P. Eng., Golder Associates Ltd., to Dave Staseff, P. Eng., Ministry of the Environment, Re: Responses to MOE Comments on Detailed Design for Lindsay/Ops Landfill Expansion (MOE Letter dated September 25, 2002).
41. Letter dated October 1, 2002 from Frank Barone, P. Eng., Golder Associates Ltd., to Dave Staseff, P. Eng., Ministry of the Environment, Re: Responses to MOE Comments [September 27, 2002] on Construction Specifications for Cell 1 - Base Liner and Leachate Collection System, Lindsay/Ops Landfill - North Expansion.
42. Letter dated October 2, 2002 from Mark Sungaila, P. Eng., Gartner Lee Ltd., to Dave Staseff, P. Eng., Ministry of the Environment, Re: Response to MOE Comments [dated September 27, 2002 on Construction Specifications] on Detailed Design of Cell 1, Lindsay-Ops Landfill Site, Certificate of Approval No. A321504, including:
a. Construction Specifications (Section 13) for Geosynthetic Clay Liner (GCL), dated September 3, 2002.
43. Letter dated March 24, 2003 from Mark Sungaila, P. Eng., Gartner Lee Limited, to Dave Staseff, P. Eng., Ministry of the Environment, Re: Detailed Design of Site Infrastructure for Lindsay-Ops Landfill Expansion (C of A No. A321504).
44. Report entitled “Detailed Design of Site Infrastructure for Lindsay-Ops Landfill Expansion (C of A No. A321504)”, prepared by Gartner Lee Limited, in association with TSH and Golder Associates, dated March 2003, including design brief and the following drawings:
Detailed Design Drawings
1. GA1 - General Facility Layout - Rev. 2 - March 12, 2003
2. R1 - Access Road ‘A’ - Sta. 0+000 to Sta. 0+083.378 - Rev. 2 - March 12, 2003
3. R2 - Access Road ‘B’ - Sta. 0+000 to Sta. 0+300 - Rev. 2 - March 12, 2003
4. R3 - Access Road ‘B’ - Sta. 0+300 to Sta. 0+600 - Rev. 2 - March 12, 2003
5. R4 - Access Road ‘B’ - Sta. 0+600 to Sta. 0+870 - Rev. 2 - March 12, 2003
6. R5 - Scale House and Scale By-Pass Area - Rev. 2 - March 12, 2003
7. R6 - Typical Sections and Details - Rev. 2 - March 12, 2003
8. CF1 - Leaf and Yard Compost Facility - Facility Layout - Rev. 2 - March 12, 2003
9. CF2 - Leaf and Yard Compost Facility - Detailed Facility Layout - Rev. 2 - March 12, 2003
10. CF3 - Leaf and Yard Compost Facility - Typical Sections and Details - Rev. 2 - March 12, 2003
11. CF4 - Leaf and Yard Compost Facility - Details - Rev. 2 - March 12, 2003

12. SG-1 - Site Grading Plan - Buildings - Rev. 2 - March 12, 2003
13. M01 - Scale House & Hazardous Waste Depot - Plan S - Rev. 2 - March 12, 2003
45. Report entitled "Detailed Design for Cell 2 Base Liner and Leachate Collection System - Lindsay-Ops Landfill Site" prepared for the Owner of Kawartha Lakes by Gartner Lee Limited, in association with Golder Associates and TSH, dated June 2004.
Detailed Design Drawings
1. Existing Conditions - Issued for MOE Approval June 30, 2004;
2. Facility Layout/Site Preparation - Issued for MOE Approval June 30, 2004;
3. Grading Plan - Cell 2 Base Excavation - Issued for MOE Approval June 30, 2004;
4. Grading Plan - Cell 2 Top of Soil Liner - Issued for MOE Approval June 30, 2004;
5. Grading Plan - Cell 2 Leachate Collection System Layout - Issued for MOE Approval June 30, 2004;
6. Grading Plan - Cell 2 Top of Leachate Collection Granular Blanket - Issued for MOE Approval June 30, 2004;
7. Typical Sections and Details - Issued for MOE Approval June 30, 2004;
8. Typical Sections and Details - Issued for MOE Approval June 30, 2004;
9. Typical Sections and Details - Issued for MOE Approval June 30, 2004; and
10. Manhole 3 and 4 Details - Issued for MOE Approval June 30, 2004.

Appendices
A. Geotechnical and Hydrogeological Data/Analyses for the Detailed Design of the Lindsay/Ops Landfill Expansion (Cell 2), prepared by Golder Associates Ltd., dated June 2004.
B. Cell 2 Base Liner and Leachate Collection System Construction Specifications, prepared by Gartner Lee Limited and Golder Associated, dated June 30, 2004 and June 15, 2004, respectively.

46. Letter dated July 29, 2004 from Mark Sungaila, P.Eng. Gartner Lee Limited to Dale Gable, P.Eng. Ministry of the Environment, Re: 40-504 - Responses to Review Comments - Owner of Kawartha Lakes, Detailed Design of Lindsay-Ops Landfill Site - Cell 2, MOE Reference Number 8240-62LQ9T.
47. Report letter entitled "Monitoring Plan for Compost Pad Facility Lindsay/Ops Landfill" and supporting documentation to Mr. Ian Parrott, Ministry of the Environment from Mr. Frank Barone, Golder Associates Ltd. dated February 9, 2005.
48. Letter and supporting documentation dated June 12, 2006 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Frank Barone, Golder Associates Ltd. submitted to satisfy Condition No. 22. The supporting documentation includes the following:
i. Report entitled " *Detailed Design Brief - Low Permeability Final Cover System for*

Completed South area of Lindsay-Ops Landfill " prepared for the Owner of Kawartha Lakes by Golder Associated Ltd dated June 2006;
ii. Construction Specifications - Low Permeability Final Cover System for Completed South Area of Lindsay-Ops Landfill prepared by Golder Associated Ltd. dated June 2006;
iii. Dwg. No. 1 - Title Page - Low Permeability Final Cover Construction Lindsay-Ops Landfill prepared by Golder Associated (Project No. 05-1113-162) dated June 8. 2006;
iv. Dwg. No. 2 - Existing Conditions - Low Permeability Final Cover Construction Lindsay-Ops Landfill prepared by Golder Associated (Project No. 05-1113-162) dated June 8. 2006;
v. Dwg. No. 3 - Cut and fill Depths for Landfill Surface Regrading - Low Permeability Final Cover Construction Lindsay-Ops Landfill prepared by Golder Associated (Project No. 05-1113-162) dated June 8. 2006;
vi. Dwg. No. 4 - Regrading Surface Prior to Geomembrane Placement - Low Permeability Final Cover Construction Lindsay-Ops Landfill prepared by Golder Associated (Project No. 05-1113-162) dated June 8. 2006;
vii. Dwg. No. 5 - Cross Sections - Low Permeability Final Cover Construction Lindsay-Ops Landfill prepared by Golder Associated (Project No. 05-1113-162) dated June 8. 2006;
viii. Dwg. No. 6 - Landfill Gas Venting System Layout - Low Permeability Final Cover Construction Lindsay-Ops Landfill prepared by Golder Associated (Project No. 05-1113-162) dated June 8. 2006;
ix. Dwg. No. 7 - Geocomposite Outlet Tubing Layout - Low Permeability Final Cover Construction Lindsay-Ops Landfill prepared by Golder Associated (Project No. 05-1113-162) dated June 8. 2006;
x. Dwg. No. 8 - Top of Final Cover Surface - Low Permeability Final Cover Construction Lindsay-Ops Landfill prepared by Golder Associated (Project No. 05-1113-162) dated June 8. 2006;
xi. Dwg. No. 9 - Details - Low Permeability Final Cover Construction Lindsay-Ops Landfill prepared by Golder Associated (Project No. 05-1113-162) dated June 8. 2006;
xii. Dwg. No. 10 - Details - Low Permeability Final Cover Construction Lindsay-Ops Landfill prepared by Golder Associated (Project No. 05-1113-162) dated June 8. 2006; and
xiii. Dwg. No. 11 - Details - Low Permeability Final Cover Construction Lindsay-Ops Landfill prepared by Golder Associated (Project No. 05-1113-162) dated June 8. 2006.
49. Letter to the Ministry of the Environment from Golder Associates Ltd., dated January 29, 2008 which describes the proposed development of the northern half of Cells 3 and 6, which differs from the original plan and explains the operational benefits of this change.
50. Construction Specifications Report prepared by Golder Associates Ltd., dated January 2008 and associated Drawings Nos. 1 to 12, Project No. 07-1113-0326.
51. Geotechnical and Hydrogeological Data/Analyses for the Detailed Design of the Cells 3 and 6 (Northern Half) Lindsay/Ops Landfill Expansion, prepared by Golder

Associates Ltd., dated January 2008.
52. Application for a Provisional Certificate of Approval for a Waste Disposal Site dated January 16, 2009 and signed by Andrew Boyd, Supervisor, Solid Waste Services including the Owner of Kawartha Lakes Household Hazardous Waste (HHW) Depot Operations Manual dated January 2009.
53. E-mail dated August 21, 2009 (4:08 PM) from Heather Van Bruinessen, Regulatory Compliance Officer to B. Wilkinson, MOE re: storage of batteries (on shelving unit with roof) & oil bins (double-lined walls).
54. E-mail dated September 8, 2009 (10:22 AM) from Heather Van Bruinessen, Regulatory Compliance Officer to B. Wilkinson, MOE re: maximum solid waste.
52. Application for a Provisional Certificate of Approval for a Waste Disposal Site signed by Andrew Boyd, Supervisor, Solid Waste Division, The Corporation of the Owner of Kawartha Lakes, including all attached supporting information.
53. E-mail dated October 1, 2009, from Andrew Boyd, Supervisor, Solid Waste Division, The Corporation of the Owner of Kawartha Lakes, to Cathy Curlew, Senior Environmental Officer, Ministry of the Environment. Re: Use of Rancor Materials for Landfill Cover.
54. E-mail dated October 2, 2009, from Andrew Boyd, Supervisor, Solid Waste Division, The Corporation of the Owner of Kawartha Lakes, to David Lee, Senior Review Engineer, Ministry of the Environment. Re: Application for a Provisional CofA - Use of Rancor Fines as ADC.
55. E-mail dated October 13, 2009, from Heather Van Bruinessen, Regulatory Compliance Officer, The Corporation of the Owner of Kawartha Lakes to David Lee, Senior Review Engineer, Ministry of the Environment. Re: Use of Rancor Fines as ADC.
56. E-mail dated October 14, 2009, from Andrew Boyd, Supervisor, Solid Waste Division, The Corporation of the Owner of Kawartha Lakes, to David Lee, Senior Review Engineer, Ministry of the Environment. Re: Application for a Provisional CofA - Use of Rancor Fines as ADC.
57. Report entitled "Ontario Regulation 347 Design Report Lindsay/OPS Landfill Site Lindsay, Ontario" dated June 26, 2009 prepared by Comcor Environmental Limited.
58. Letter dated January 15, 2010 addressed to Rick Li, Ministry of the Environment from Denise Burgess, Comcor Environmental Limited providing a response to the MOE comments on the design report (Item 57).
59. Letter dated February 25, 2010 addressed to Rick Li, Ministry of the Environment from Denise Burgess, Comcor Environmental Limited providing a response to the MOE comments on the header pipe trench and liner penetration detail.
60. Report entitled "Geotechnical and Hydrogeological Data/Analyses for the Detailed Design of Cells 3 and 6 (Southern Half), Lindsay-Ops Landfill, Lindsay, Ontario" prepared by Golder Associated (Project Number 11-1111-0146) and dated March 2012.
61. Report entitled "Construction Specifications Cells 3 and 6 (Southern Half), Lindsay-Ops Landfill, Owner of Kawartha Lakes, Lindsay, Ontario" prepared by Golder Associated (Project Number 11-1111-0146) and dated March 2012.

62. Detailed design drawing set entitled "Owner of Kawartha Lakes - Cells 3 and 6 (South Half) Construction - Lindsay-Ops Landfill" prepared by Golder Associates (Project Number 11-1111-1146). The set includes the following drawings:
i. Drawing No. 1 entitled "Title Page" dated March 12, 2012;
ii. Drawing No. 2 entitled "Site Boundaries and Existing Facilities"dated March 12, 2012;
iii. Drawing No. 3 entitled "Proposed Base Grade Prior to Liner Installation" dated March 12, 2012;
iv. Drawing No. 4 entitled "Proposed Base Grade Cross-Sections A-A' and B-B'" dated March 12, 2012;
v. Drawing No. 5 entitled "Proposed Top of Soil Liner Contours" dated March 12, 2012;
vi. Drawing No. 6 entitled "Proposed Leachate Collection System Pipe Layout" dated March 12, 2012;
vii. Drawing No. 7 entitled "Proposed Top of Leachate Collection Granular Blanket Contours"dated March 12, 2012;
viii. Drawing No. 8 entitled "Proposed Final Grade Contours Prior to Waste Placement" dated March 12, 2012;
ix. Drawing No. 9 entitled "Typical Details" dated March 12, 2012;
x. Drawing No. 10 entitled "Typical Details" dated March 12, 2012;
xi. Drawing No. 11 entitled "Typical Details" dated March 12, 2012; and
xii. Drawing No. 12 entitled "Leachate Collection System Maintenance Hole 7 and 8 Typical Details" dated March 12, 2012.

63. Letter dated April 10, 2012 addressed to Ms. Heather Dzurko, Supervisor Solid Waste Division
The Corporation of the Owner of Kawartha Lakes from Mr. Dale Gable, Ministry of the Environment requesting additional information pertaining to liner construction, specifications and leachate collection piping.
64. Letter dated May 18, 2012 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Frank Barone, Golder Associates providing clarification on construction specifications and construction methodology's.
65. Letter dated May 29, 2012 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Frank Barone, Golder Associates providing an additional detail on connecting the new liner to the existing liner.
66. Report entitled "Operating Instructions - Landfill Gas Collection and Flaring System - Lindsay/Ops Landfill Site" prepared for the Owner of Kawartha Lakes by Comcor Environmental Limited dated March 2012.
67. Appendix A of the letter dated October 31, 2012 addressed to Mr. Dale Gable, Ministry of the Environment from Ms. Roberta Purdue, Owner of Kawartha-Lakes regarding the specifications for an additional waste oil tank.
72. Application for Amendment of the Provisional Environmental Compliance Approval

for a Waste Disposal Site dated November 21, 2014, and received on November 24, 2014, and signed by Mr. David Kerr, Manager, Solid Waste Services including the Owner of Kawartha Lakes, regarding change of hours, along with supporting documentation that includes the Report listed as item No. 70 of the Schedule A.
73. Application for Amendment of the Provisional Environmental Compliance Approval for a Waste Disposal Site dated March 3, 2014 and received on March 3, 2014, and signed by Mr. David Kerr, Manager, Solid Waste Services to modify conditions listed under Section 6 in the ECA, composting operations.
74. Application for Amendment of the Provisional Environmental Compliance Approval for a Waste Disposal Site dated February 20, 2014 and received on March 21, 2014, and signed by Mr. David Kerr, Manager, Solid Waste Services for including the monitoring wells "lagoon Wells" in Schedule B.
75. Application for Amendment of the Provisional Environmental Compliance Approval for a Waste Disposal Site dated January 30, 2015 and received on February 4, 2015, and signed by Mr. David Kerr, Manager, Solid Waste Services for the relocation of an existing composting pad and associated stormwater pond to a future landfill disposal cell at the Lindsay-Ops Landfill Site
76. Report submitted in support of the Application listed as item No. 73, entitled "Supporting Documentation for ECA Amendment (A321504)-Relocation of Existing Leaf and Yard Waste Composting Operations, Lindsay-Ops Landfill Site, Owner of Kawartha Lakes, dated January 2015, prepared by Stantec Consulting Ltd.
77. Drawing No. C-100 included in the Report listed as item No. 74 of the Schedule A, showing the proposed Leaf and Yard Composting Facility, monitoring locations and stormwater management works, dated January 30, 2015, prepared by Stantec Consulting Ltd.
78. Letter from Ms. Angela Porteou, Owner of Kawartha Lakes, dated July 6, 2015, addressed to Ms. Cathy Curlew, Ministry of the Environment and Climate Change, providing additional information supplementing the Report listed as item No. 74 of the Schedule A.
79. Letter from Ms. Angela Porteous, Owner of Kawartha Lakes, dated July 6, 2015, addressed to Mr. Khalid Hussain, Ministry of the Environment and Climate Change, providing additional information supplementing the Report listed as item No. 74 of the Schedule A.
80. Letter from Mr. Jim Archibald, Stantec Consulting Inc., dated July 10, 2015, addressed to Mr. Khalid Hussain, Ministry of the Environment and Climate Change, providing additional information supplementing the Report listed as item No. 74 of the Schedule A.
81. Letter from Mr. Jim Archibald, Stantec Consulting Inc., dated September 2, 2015, addressed to Mr. Khalid Hussain, Ministry of the Environment and Climate Change, providing additional information supplementing the Report listed as item No. 74 of the Schedule A.
82. Consolidated Maintenance and Operations Report, Lindsay-Ops Landfill, Lindsay, Ontario" prepared by UEM - Urban and Environmental Management Inc., dated

December 2012.
83. Email and attachments from Ms. Angela Porteous, S.C., Owner of Kawartha Lakes addressed to Mr. Khalid Hussain, Ministry of Environment and Climate Change, dated September 10, 2015, providing the Owner's comments and other information.
84. Email and attachments from Ms. Angela Porteous, S.C., Owner of Kawartha Lakes addressed to Mr. Khalid Hussain, Ministry of Environment and Climate Change, dated September 17, 2015, providing the Owner's comments and map showing monitoring location SW18, and other information.
85. Email from Ms. Angela Porteous, Owner of Kawartha Lakes, dated September 28, 2015, addressed to Mr. Khalid Hussain, Ministry of the Environment and Climate Change, providing additional information regarding the landfill site monitoring program.
86. Email from Ms.Angela Porteous, Owner of Kawartha Lakes, dated October 2, 2015, addressed to Ms. Cathy Curlew, Ministry of the Environment and Climate Change, providing additional information regarding the proposed stormwater management pond for relocated Leaf and Yard Waste Composting Facility.
87. Revised Drawings No. C-100 and C-101, prepared by Stantec Consulting Ltd., included with Email dated October 1, 2015 from Ms. Angela Porteous, Owner of Kawartha Lakes, dated October 1, 2015, addressed to Mr. Khalid Hussain and others, providing these drawings and other information.
88. Application for approval dated November 30, 2015 and received on December 1, 2015 and supporting documents

89. Report - Construction Specifications Cells 4 and 5 (Northern Half) Lindsay/OPS Landfill, Owner of Kawartha Lakes, Lindsay, Ontario (Report Number 1524542) - November 2015
90. Report - Geotechnical and Hydrogeological Data/Analysis for the Detailed Design of Cells 4 and 5 (north half) Lindsay/OPS Landfill, Lindsay, Ontario (Report Number 1524542) - November 2015

91. Detailed Design Drawings - Issued for MOE Approval - Lindsay OPS Landfill, Cells 4 and 5 (Northern half) - (Project Number 1524542) - Stamped November 30, 2015 - F. S. Barone

92. Correspondence with Frank Barone (see memo to file) regarding clarification of size of waste fill area

93. Application for Amendment of the Provisional Environmental Compliance Approval for a Waste Disposal Site dated December 6 2016 and received on December 8,2016 and signed by Mr. David Kerr, Manager, Solid Waste Services including the Owner of Kawartha Lakes, regarding changes to the Cover Materials and Monitoring Requirements.

94. Letter dated May 16,2017 regarding the relocation of composting pad and leachate collection pond prepared by Golder Associates.

95. Email dated 19th June 2017 from Angela Porteous, Regulatory Compliance Officer, Owner of Kawartha Lakes regarding the Solids and Odour management from the Infiltration Pond.

Previous Works Approved on November 15, 2002:

96. Application for Approval of Municipal and Private Sewage Works submitted by the Owner of Kawartha Lakes dated August 28, 2002 and design specifications and drawings prepared by Totten Sims Hubicki Associates (1997) Limited, Whitby, Ontario.

97. "Lindsay/Ops Landfill Continuing Use and North Landfill Expansion - Leachate/Sewage Pumping Stations Design Report" August 2002, prepared by Totten Sims Hubicki.

98. "Lindsay/Ops Landfill Continuing Use and North Landfill Expansion - Leachate/Sewage Pumping Stations, TSH Project No. 52-27395" August 2002, prepared by Totten Sims Hubicki.

99. "Continued Use & North Expansion of Existing Lindsay-Ops Landfill - Leachate Disposal Study" July 2000, prepared by Earth Tech Canada Inc.

100. "Provisional Certificate of Approval Waste Disposal Site Number A321504 - Lindsay-Ops Landfill Site" issued May 11, 2001.

Previous Works Approved on June 18, 2003:

101. Application for approval submitted by the Owner of Kawartha Lakes dated March 3, 2003 and drawings and design specifications prepared by Gartner Lee Limited, Markham, Ontario.

Previous Works Approved on October 10, 2008:

102. Application for approval submitted by the Owner of Kawartha Lakes dated April 25, 2008 and drawings and design specifications prepared by Golder Associates Ltd., Mississauga, Ontario.

Previous Works Approved on November 14, 2008

103. Document entitled "2018 Landfill Gas Collection System Detailed Design Report, Lindsay-Ops Landfill Site, Kawartha Lakes, Ontario Amended Compliance Approval Number A321504", dated June 13, 2018 and prepared by Comcor Environmental Limited on behalf of the Owner of Kawartha Lakes.

Previous Works Approved on September 3, 2019:

104. Application to amend Environmental Compliance Approval A321504, submitted by the Owner of Kawartha Lakes, dated August 16, 2019 re: Change to Cells 4 and 5 (North Half), Stage 2 Design, WSP Project No. 171-1-835-02.

Valve Chamber for Compost Infiltration Pond

105. Application to amend Environmental Compliance Approval A321504, submitted by the Owner of Kawartha Lakes, dated June 12, 2020 re: Valve Chamber for Compost Pad Infiltration Pond.

106 Application to amend Environmental Compliance Approval A321504, submitted by the Owner of Kawartha Lakes, dated December 24, 2021, including technical supporting documents prepared by WSP dated December 14, 2021, re: Lindsay Ops Landfill Cells 4 and 5 (South Half), Design, Environmental Compliance Approval No.A321504.

107 Application to amend Environmental Compliance Approval A321504, dated May 31, 2022, including technical supporting documents.

SCHEDULE "B"

This Schedule "B.1" forms part of this Approval.

GROUNDWATER MONITORING PROGRAM - EXISTING FILL AREA

1. Landfill Monitors : 6-90-R1 and 7-90-R1

Parameters: alkalinity, conductivity, pH, BOD, COD, DOC, barium, chloride, fluoride, iron, manganese, hardness, calcium, magnesium, potassium, sodium, TKN, nitrate, nitrite, ammonia, phenols, phosphorus, sulphate, benzene, toluene, xylene, aluminium, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, silver, thallium, vanadium, zinc, antimony, arsenic, selenium.

Frequency: Two times per year (May and October)

Parameters: Volatile Organic Compounds, Halogenated and Non-Halogenated

Frequency: Once per year (May)

2. Overburden Monitors :

North - 32-93-1/2/3

East - 12-91-1/2, 49-96-2/3

West - 15-91-1/2, 16-91-1/2, 17-91-1/2, 19-91

South - 13-91-1/2, 14-07, 18-91, 23-07, 25-91, 29-93, 35-93-1/2, 36-93, 37-93-1/2, 38-93, 39-93-1/2, 61-10-2

Parameters: alkalinity, conductivity, pH, COD, DOC, barium, chloride, fluoride, iron, manganese, hardness, calcium, magnesium, potassium, sodium, nitrate, nitrite, ammonia, phenols, phosphorus, sulphate, benzene, toluene, xylene, aluminium,

beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, silver, vanadium, zinc.
Frequency: twice per year (May and October)
3. Bedrock Monitors :
20-91-1/2/3, 21-91-1/2/3, 25-96, 27-93, 28-93, 49-96-1, 55-98-1/2, 61-10-1
Parameters: alkalinity, conductivity, pH, COD, DOC, barium, chloride, fluoride, iron, manganese, hardness, calcium, magnesium, potassium, sodium, nitrate, nitrite, ammonia, phenols, phosphorus, sulphate, benzene, toluene, xylene, aluminum, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, silver, vanadium, zinc.
Frequency: twice per year (May and October)
4. Water Levels :
All monitors (excludes Residential Wells, lagoon well and office well) - 4 times per year (February, May, July, October)
5. Lagoon Wells:
(i) Overburden: 30-93, 31-93, 45-95-2, 46-95-2, 47-96-2, 48-96-2, 59-05, 60-05
(ii) Bedrock: 45-95-1, 46-95-1, 47-96-1, 48-96-1
Parameters: alkalinity, conductivity, pH, COD, DOC, barium, chloride, fluoride, iron, manganese, hardness, calcium, magnesium, potassium, sodium, nitrate, nitrite, ammonia, phenols, phosphorus, sulphate, benzene, toluene, xylene, aluminium, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, silver, vanadium, zinc.
Frequency: twice per year (May and October)

SCHEDULE "B.2"

This Schedule "B.2" forms part of this Approval.

GROUNDWATER MONITORING PROGRAM - LANDFILL EXPANSION

Well Identification (see Map 7-1 in the Operations and Maintenance Manual)	**Hydrogeologic Unit Monitored**	**Sample Parameters (Schedule D)**	**Sampling Frequency (per year)**
32-93-1	silty sand till	Indicator Comprehensive	2 x 1 x
32-93-2	silty sand till	Indicator Comprehensive	2 x 1 x
32-93-3	silty sand till	Indicator Comprehensive	2 x 1 x
43-93-1	overburden	Indicator Comprehensive	2 x 1 x
43-93-2	overburdent	Indicator Comprehensive	2 x 1 x
44-93-1	sandy silt till	Indicator	2 x 1 x

		Comprehensive	
44-93-2	sandy silt till	Indicator Comprehensive	2 x 1 x
45-93	silty sand to sandy silt till	Indicator Comprehensive	2 x 1 x
11-90	limestone bedrock	Indicator Comprehensive	2 x 1 x
53-98	limestone bedrock	Indicator Comprehensive	2 x 1 x
55-98-1/2	limestone bedrock	Indicator Comprehensive	2 x 1 x
58-02-1	Overburden	Indicator Comprehensive	2 x 1 x
57-02-2	Overburden	Indicator Comprehensive	2 x 1 x
61-10-1	Bedrock	Indicator Comprehensive	2 x 1 x
61-10-2	Overburden	Indicator Comprehensive	2 x 1 x
61-17-1	Bedrock	Indicator Comprehensive	2 x 1 x
62-17-1	Bedrock	Indicator Comprehensive	2 x 1 x
62-17-2	Bedrock	Indicator Comprehensive	2 x 1 x
62-17-3	Bedrock	Indicator Comprehensive	2 x 1 x

1. Water levels to be measured at the time of sampling at all monitoring locations.

SCHEDULE "C"

This Schedule "C" forms part of this Approval.

LEACHATE QUALITY AND QUANTITY MONITORING

Existing Fill Area:

Location	Parameters	Frequency
Quality: Existing Leachate Pumping Chamber	conductivity, chloride, nitrate, nitrite, ammonia, TKN, sulphate, barium, iron, lead, cadmium, chromium, BOD, COD, DOC, phenols, phosphorus, benzene, toluene, xylene	Monthly (unless samples collected in accordance with the Lindsay WPCP OWRA ECA of Approval are available as surrogates)
Existing Leachate Pumping Chamber	arsenic, boron, free cyanide, fluoride, mercury, NTA, pesticides, radionuclides, selenium, silver, trihalomethanes	Twice per year (May and October)
Quantity: Existing Leachate Pumping Chamber	flow volume	continuous

North Expansion Fill Area:

Location	Parameters	Frequency
Quality: North Expansion Leachate Pumping Chamber	Comprehensive List in Schedule "D"	Annual
North Expansion Leachate Pumping Chamber	Indicator List in Schedule "D"	Twice per year
Quantity: North Expansion Leachate Pumping Chamber	flow volume	continuous

Leachate heads acting on the composite liner in the north expansion fill area shall be monitored **three (3) times per year** using **vibrating wire piezometers (VWPs)** installed on the liner surface at eight locations shown on Map 7-2, Proposed Leachate Monitoring Locations, Golder Associates, September 2001 (Item 37(a) in Schedule "A").

SCHEDULE "D"

This Schedule "D" forms part of this Approval.

GROUNDWATER AND LEACHATE MONITORING PARAMETERS

Comprehensive List	**Indicator List**
Inorganics Alkalinity	Alkalinity
Ammonia-N	Ammonia-N
Arsenic	
Barium	Barium
Boron	Boron
Cadmium	
Calcium	Calcium
Chloride	Chloride

Chromium	
Conductivity (lab)	Conductivity (lab)
Conductivity (field)	Conductivity (field)
Copper	
Iron	Iron
Lead	
Magnesium	Magnesium
Manganese	
Mercury	
Nitrate	Nitrate
Nitrite	
Total Kjeldahl Nitrogen (TKN)	
pH (lab)	pH (lab)
pH (field)	pH (field)
Total Phosphorus	
Potassium	
Sodium	Sodium
Suspended Solids (Leachate Only)	Suspended Solids (Leachate Only)
Total Dissolved Solids (TDS)	Total Dissolved Solids (TDS)
Sulphate	Sulphate
Zinc	
Volatile Organics Benzene	
1,4 Dichlorobenzene	
Dichloromethane	
Toluene	
Vinyl Chloride	
Other Organics Biochemical Oxygen Demand (BOD_5)	Biochemical Oxygen Demand (BOD_5)
Chemical Oxygen Demand (COD)	Chemical Oxygen Demand (COD)
Dissolved Organic Carbon (DOC)	Dissolved Organic Carbon (DOC)
Phenols	
PCBs	

SCHEDULE "E"

This Schedule "E" forms part of this Approval.

SURFACE WATER MONITORING PROGRAM

Stations	Parameters	Frequency
Drainage Ditches: SW1, SW2, SW3, SW4, SW14, SW15,	conductivity, pH, alkalinity, hardness, COD, chloride, fluoride, nitrite, nitrate, total phosphorus, sulphate, calcium,	Four (4) times per year - samples shall be collected within 12

SW16, SW18	sodium, potassium, iron, manganese, phenols, DOC, ammonia, in situ dissolved oxygen, in situ temperature, in situ conductivity, in situ pH, aluminium, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, silver, thallium, vanadium, zinc, antimony, arsenic, selenium, suspended solids, turbidity	hours of the first rainfall greater than 15 mm, starting from February 1, May 15, August 1, and October 1
Upgradient and Downgradient: SW13, SW14, Scugog River (1 upgradient, 1 downgradient)	conductivity, pH, alkalinity, hardness, COD, chloride, fluoride, nitrite, nitrate, total phosphorus, sulphate, calcium, sodium, potassium, iron, manganese, phenols, DOC, ammonia, in situ dissolved oxygen, in situ temperature, in situ conductivity, in situ pH, aluminium, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, silver, thallium, vanadium, zinc, antimony, arsenic, selenium, suspended solids, turbidity	Four (4) times per year - samples shall be collected within 12 hours of the first rainfall greater than 15 mm, starting from February 1, May 15, August 1, and October 1
SW3, SW13, SW14, SW18 Scugog River (1 upgradient, 1 downgradient)	Volatile Organic Compounds, Halogenated and Non-Halogenated (refer to Schedule E.1)	Biannual (every two years)
CP #1, CP#2	pH (field), Magnesium, Aluminum, pH (lab), Potassium, Boron, Temperature(field), Sodium, Cadmium, Conductivity (field), Dissolved Organic Carbon, Chromium, Conductivity (lab), Thallium, Cobalt, Total Alkalinity (as $CaCO_3$), Chemical Oxygen Demand, Copper, Total Dissolved Solids, Ammonia, Iron, Strontium, Phosphorus (Total), Lead, Hardness, Total Kjeldhl Nitrogen, Manganese, Chloride, Phenols Nickel, Sulphate, Mercury, Vanadium, Nitrate, Arsenic, Zinc, Nitrite, Barium, Antimony, Calcium, Fluoride, Beryllium, Molybdenum, Selenium, Silver,Tannins and Lignins	Twice per year during the spring and late summer/early fall.

1. All surface water monitoring locations, except for CP#1 and CP#2 appearing in Schedule E shall be sampled for total PCBs every three (3) years, with the exception of SW13 and SW3 which shall be sampled for total PCBs Four (4) times per year. Should concentrations of total PCBs at SW3 or SW13 exceed 0.001 mg/L then the Owner shall sample all stations in Schedule E for total PCBs for two (2) consecutive sampling events. Should the Owner find exceedances of 0.001 mg/L total PCB in any samples in the following sampling events the District Office should be notified.
2. For surface water sampling station locations, see Map 7-3, Final Stormwater Ditches, Catchment Areas and Surface Water Monitoring Locations, and Map 7-4, Scugog River Surface Water Sampling Stations (from Items 28(c) an 35(m) in Schedule "A")
3. Tannins and Lignins are to be included in the analytical parameters for SW14 and SW18.

Schedule E.1

This Schedule "E.1" forms part of this Approval.

Analytical Test Group Name	**Parameters**
Volatiles, Halogenated	1,1,2,2-Tetrachloroethane
	1,1,2-Trichloroethane
	1,1-Dichloroethane
	1,1-Dichloroethylene
	1,2-Dichlorobenzene
	1,2-Dichloroethane (Ethylene Dichloride)
	1,2-Dichloropropane
	1,3-Dichlorobenzene
	1,4-Dichlorobenzene
	Bromoform
	Bromomethane
	Carbon tetrachloride
	Chlorobenzene
	Chloroform
	Chloromethane
	Cis-1,3-Dichloropropylene
	Dibromochloromethane
	Ethylene Dibromide
	Methylene Chloride
	Tetrachloroethylene (Perchloroethylene)
	Trans-1,2-Dichloroethylene
	Trans-1,3-Dichloropropylene
	Trichloroethylene
	Trichlorofluoromethane
	Vinyl chloride (Chloroethylene)
Volatiles, Non-Halogenated	Benzene
	Styrene
	Toluene

	o-Xylene
	m-Xylene and p-Xylene (Note 1)

Schedule E.1: Analytical Test Groups and Parameters

Note 1: m-Xylene and p-Xylene often co-elute in the analysis. A single combined result may be reported as m-Xylene.

SCHEDULE "F"

This Schedule "F" forms part of this Approval.

LANDFILL GAS MONITORING

Monitoring Probe (see Map 9-1, Landfill Gas Management and Monitoring System - Item 35(m) in Schedule "A")	Parameters	Frequency
Existing: 12-91, 13-91, 14-91, 16-91, 17-91, 6-90-R1, 7-90-R1, 33-93	methane concentration	monthly during frozen ground conditions and quarterly otherwise
Proposed: GP1, GP2, GP3, GP4, GP5, GP6, GP7, GP8, GP9, GP10	methane concentration	monthly during frozen ground conditions and quarterly otherwise

SCHEDULE "G"

This Schedule “G” forms part of this Approval.

LEACHATE COLLECTION AND DISPOSAL SYSTEM MONITORING

For the purposes of this monitoring program, the following definitions apply:

(a) Monthly means once every month;

(b) Quarterly means once every three months;

(c) Semi-annually means once every six months; and

(d) Annually means once every twelve months.

Table 1 - Leachate Monitoring Sampling Location: Leachate Pumping Station No. 1 Chamber			
Parameters	**Frequency**	**Parameters**	**Frequency**
(Ammonia + Ammonium) N	Monthly	Arsenic	Semi-annually
Barium	Monthly	Boron	Semi-annually
Benzene	Monthly	Cyanide (Free)	Semi-annually
CBOD5	Monthly	Fluoride	Semi-annually
Cadmium	Monthly	Mercury	Semi-annually
Chloride	Monthly	NTA	Semi-annually
Chromium	Monthly	Pesticides	Semi-annually
COD	Monthly	Radionuclides	Semi-annually
Conductivity	Monthly	Selenium	Semi-annually
DOC	Monthly	Silver	Semi-annually
Iron	Monthly	Trihalomethanes	Semi-annually
Lead	Monthly		
Nitrates as N	Monthly		
Nitrites as N	Monthly		
Phenols	Monthly		
Phosphorus	Monthly		
Sulphate	Monthly		
Toluene	Monthly		
Total Kjeldahl Nitrogen (TKN)	Monthly		
Xylene	Monthly		

Table 2 - Leachate Monitoring Sampling Location: Leachate Pumping Station No. 2 Chamber			
Parameters	**Frequency**	**Parameters**	**Frequency**
Arsenic	Annually	Alkalinity	Semi-annually
Cadmium	Annually	(Ammonia + Ammonium) N	Semi-annually
Chromium	Annually	Barium	Semi-annually
Copper	Annually	Boron	Semi-annually
Lead	Annually	Calcium	Semi-annually
Manganese	Annually	Chloride	Semi-annually
Mercury	Annually	Conductivity	Semi-annually
Nitrite	Annually	Iron	Semi-annually
Total Kjeldahl Nitrogen	Annually	Magnesium	Semi-annually
Total Phosphorus	Annually	Nitrate	Semi-annually
Potassium	Annually	pH (Lab)	Semi-annually
Zinc	Annually	pH (Field)	Semi-annually
Benzene	Annually	Sodium	Semi-annually
1,4 Dichlorobenzene	Annually	Suspended Solids	Semi-annually
Dichloromethane	Annually	Total Dissolved Solids	Semi-annually
Toluene	Annually	Sulphate	Semi-annually
Vinyl Chloride	Annually	Biochemical Oxygen Demand (CBOD5)	Semi-annually
Phenols	Annually	Chemical Oxygen Demand	Semi-annually
PCBs	Annually	Dissolved Organic Carbon	Semi-annually

The reasons for the imposition of these terms and conditions are as follows:

The reason for Conditions 1.1 and 1. 2 is to ensure that the Site is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.
The reason for Conditions 1.3, 1.4, 1.5, 1.9, 1.10, 1.11, 1.12 and 1.13 is to clarify the legal rights and responsibilities of the Owner under this Approval of Approval.
Conditions 1.6 and 1.7 are included to ensure that the appropriate Ministry staff have ready access to information and the operations of the Site, which are approved under this Approval.
Condition 1.8 has been included in order to clarify what information may be subject to the Freedom of Information Act.
Conditions 1.14 to 1.16 inclusive are included, pursuant to subsection 197(1) of the EPA, to provide that any persons having an interest in the Site are aware that the land has been approved and used for the purposes of waste disposal.
The reasons for Condition 1.17 are to restrict potential transfer or encumbrance of the Site without the approval of the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this ECA of Approval.
The reasons for Conditions 1.18 and 1.19 are to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval

and to ensure that the Director is informed of any changes.
The reason for Condition 1.20 is to ensure that appropriate Ministry staff have ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this ECA of Approval. This condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the EPA and OWRA.
The reasons for Conditions 2.1 to 2.6 is to ensure that the Site is designed, constructed and operated in an environmentally acceptable manner, based on the conceptual design and operations for the Site.
The reason for Condition 2.7 is to ensure the availability of as-built drawings for inspection and information purposes.
The reasons for Conditions 2.8, 2.9, 2.10, 2.11, 2.12, 2.15, 2,16 and 2.17 are to ensure that the engineered facilities are properly installed and constructed to meet the design specifications and performance objectives.
The reasons for Conditions 2.13 and 2.14 are to ensure the Ministry is updated on construction progress and to ensure the long-tern protection of the health and safety of the public and the environment;
The reasons for Conditions 2.18 and 2.19 are to ensure that preparation and construction within a new landfill cell proceeds in accordance with approved detailed design plans, technical specifications and QA/QC activities and procedures.
The reasons for Conditions 2.20 and 2.21 are to expedite and monitor the waste settling process prior to placement of the GCL, geomembrane and leachate collection system for the north expansion fill area on the common north slope.
The reasons for Conditions 3.1 and 3.2 is for approving the detailed design for Cell 1, Cell 2, Cell3 and Cell 6 and the ancillary facilities associated with landfill expansion and to allow the Owner to develop and operate the landfill site expansion in accordance with the approved final detailed design.
The reason for Condition 3.3 is to ensure the gas collection and flaring system shall be built and operated as per the submission and supporting documentation.
The reasons for Condition 3.4 are to ensure the Owner has plans in place during the construction of the system to address potential off-site impacts and construction timing.
The reason for Condition 3.5 is to ensure the Owner documents the construction activities and provides this information in a report to the District Manager.
The reasons for Condition 3.6 are to ensure the proper maintenance of the gas collection system and the District Manager is informed of any changes to the gas wells.
The reason for Conditon 3.7 is to approve the leachate collection and disposal system.
The reason for Conditions 4.1, 4.2 and 4.3 is to ensure that waste disposal at the site is undertaken in accordance with applicable Ministry regulations, and the approved documents incorporated into this Approval. Compliance with these regulations and guidelines and an organized operation will ensure that the site does not cause and adverse effect on the environment.
The reason for Conditions 4.4, 4.5 and 4.6 is to specify the approved areas from which waste may be accepted at the Site and the types and amounts of waste that may be accepted for disposal at the Site, based on the Owner's application and supporting

documentation.
The reason for Conditions 4.7, 4.8, 4.9 and 4.10 is to specify restrictions on the extent of landfilling at this Site based on the Owner's application and supporting documentation. These limits define the approved volumetric capaOwner of the site.
The reason for Conditions 4.11, 4.12 and 4.13 is to ensure only waste approved by this Approval ia accepted at the Site.
The reasons for Condition 4.14 is to accommodate the pre-loading and to allow for settling of the north slope area of the existing fill area by landfilling in a north-south direction within the north expansion fill area.
The reasons for Conditions 4.15, 4.16, 4.17 and 4.18 are to specify the normal hours of operation for the landfill Site and a mechanism for amendment of the hours of operation.
The reasons for Conditions 4.19 and 4.20 are to ensure that users of the Site are fully aware of important information and restrictions related to Site operations under this ECA of Approval.
The reason for Conditions 4.22, 4.23, 4.24, 4.25, 4.26, 4.27, and 4.28 are to ensure that the Site is operated in an environmentally acceptable manner for protection of the natural environment and public health and safety.
The reasons for Conditions 4.29, 4.30, 4.31, 4.32, 4.33, 4.34, 4.35, 4.36, 4.37 and 4.38 are to minimize and control the use of the landfill Site by gulls with the goal to prevent the potential for gull/aircraft interaction.
The reason for Condition 4.39 is to ensure de-icing operations at the site do not impact the environmental monitoring program.
The reason for Condition 4.40 is to ensure the Owner is aware of their responsibility for ensuring regarding spillages at the Site.
The reason for Conditions 4.41, 4.42 and 4.43 are to ensure that landfill gas generated at this Site is managed in an environmentally acceptable manner.
The reason for Condition 4.45 is to ensure protection of the composite liner and leachate collection system in the north expansion fill area.
The reasons for Condition 4.44 are to minimize the potential for clogging of the leachate drainage layer and to minimize temperature effects on the leachate collection system. Failure to maintain the specified minimum thickness of waste and cover material may result in a decrease in the service life of the drainage layer.
The reason for Condition 4.49 and 4.47 are to ensure that leachate generated at this Site is disposed of in an environmentally acceptable manner.
The reason for Condition 4.46 is to ensure that noise from landfill operations are controlled to minimize any impacts to receptors.
The reason for Condition 4.51 is to determine the current and projected leachate quality and quantity generated at this Site and landfilling proceeds, and to implement an appropriate long-term leachate management plan for this Site.
The reason for Conditions 4.50, 4.51 and 4.52 is to ensure that surface water and stormwater is managed in an environmentally acceptable manner.
The reason for Condition 4.53 is to ensure procedures are in place to protect features

of the landfill are protected during construction of the cells.
The reason for Condition 4.54 is to ensure the Owner can record weather conditions at the Site for the records and to assist in managing nuisances at the Site (Litter Control).
The reason for Condition 5.1 is to ensure that waste disposal at the site is undertaken in accordance with applicable Ministry of the Environment regulations, and the approved documents incorporated into this Approval. Compliance with these regulations and guidelines and an organized operation will ensure that the site does not cause and adverse effect on the environment.
The reason for Condition 5.2 is to specify the approved areas from which waste may be accepted at the Site and the types and amounts of waste that may be accepted for disposal at the Site, based on the Owner's application and supporting documentation.
The reason for Conditions 5.3 is to ensure the Owner is fully aware the burning of waste at the Site is not permitted and that open burning of waste is unacceptable because of concerns with air emissions, smoke and other nuisance affects, and the potential fire hazard.
The reason for Condition 5.4, 5.5 and 5.6 are to specify restrictions on the extent of landfilling at this Site based on the Owner's application and supporting documentation. These limits define the approved volumetric capaOwner of the site. Approval to landfill beyond these limits would require an application with supporting documentation submitted to the Director.
The reasons Conditions 5.7, 5.8, 5.9, 5.10, 5.11, and 5.12 have been included are to ensure asbestos waste is handled and disposed of in accordance with O. Reg. 347 as amended from time to time. Proper handling and disposal of asbestos waste ensures that the asbestos waste does not cause an adverse impact on the environment and also does not affect human health.
The reason for Condition 5.13 is to specify the approval requirements for use of alternative cover material at the Site.
The reason for Condition 5.14 is to approved alternative daily covers for the Site.
The reason for Condition 5.15 is to ensure the Owner monitors leachate at the Site.
The reason for Conditions 5.16 is to ensure the leachate collections system operates in an environmental protection manner.
The reasons for Conditions 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7 and 6.8 are to ensure that these facilities are operated in an environmentally acceptable manner for the protection of the natural environment and public health and safety.
The reason for Conditions 7.1, 7.2, 7.3, 7.4 and 7.5, are to ensure that accurate waste records are maintained to ensure compliance with the conditions in this ECA of Approval (such as fill rate, site capaOwner, record keeping, annual reporting, and financial assurance requirements), the EPA and its regulations. Record keeping is necessary to determine compliance with this ECA of Approval, the EPA and its regulations.
The reason for Condition 8.1 is to establish a forum for the exchange of information and public dialogue on activities carried out at the landfill Site. Open communication with the public and local authorities is important in helping to maintain high standards for site

operation and environmental protection.
The reasons for Conditions 9.1, 9.2, 9.3 and 9.4 are to ensure that the Ministry is informed of any spills or fires at the Site and to provide public health and safety and environmental protection.
The reasons for Conditions 10.1, 10.2, 10.3, 10.4 and 10.5 are to ensure protection of the natural environment and the integrity of the groundwater monitoring network.
The reason for Conditions 10.6, 10.7, 10.8, 10.9, 10.10, 19.11, 10.12, 10.13 and 10.14 are to demonstrate that the landfill site is performing as designed and the impacts on the natural environment are acceptable. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.
The reason for Conditions 11.1, 11.2 and 11.3 are to ensure that the Owner follows a plan with an organized set of procedures for identifying and responding to unexpected but possible problems at the Site. A remedial action / contingency plan is necessary to ensure protection of the natural environment. A leachate contingency plan is a specific requirement of Reg. 232.
The reason for Conditions 12.1 through 12.4 are to ensure that monitoring and reporting mechanisms are in place so that the Scugog River wetland and ecosystem are not adversely affected by landfill leachate.
The reason for Conditions 13.1, 13.2, 13.3 and 13.4 are to establish and maintain a forum for the exchange of information and public dialogue on activities to be carried out at the landfill site. Open communication with the public and local authorities is important in helping to maintain high standards for site operation and environmental protection.
The reason for Condition 14.1 is to ensure that the Site is operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.
The reasons for Condition 15.1 is to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified. An annual report is an important tool used in reviewing site activities and for determining the effectiveness of site design.
The reasons for Conditions 16.1 is to ensure that final closure of the Site is completed in an aesthetically pleasing manner and to ensure the long-term protection of the natural environment.
The reason for Condition 16.2 is to ensure proper public consultation about the end use of the Site is undertaken and that the end use activities are consistent with those identified during the EA process.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A321504 issued on March 11, 2022

In accordance with Section 139 of the *Environmental Protection Act,* you may by written notice served upon me and the Ontario Land Tribunal within 15 days after receipt of

this notice, require a hearing by the Tribunal. Section 142 of the *Environmental Protection Act* provides that the notice requiring the hearing ("the Notice") shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the *Environmental Protection Act,* a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

and

The Director appointed for the purposes of Part II.1 of the *Environmental Protection Act*
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or** www.oltt.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the *Environmental Protection Act.*

DATED AT TORONTO this 30th day of June, 2022



Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

AQ/
c: District Manager, MECP Peterborough
Kerri Snoddy, C.Tech
Regulatory Compliance Officer
David Kerr - main contact, City of Kawartha Lakes

APPENDIX B

Sampling Protocols

FIELD SAMPLING PROTOCOL FOR CKL LANDFILL SITES

Last updated: November 19, 2018

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Review Sampling Requirements

- All of the sampling requirements are listed in the monthly sampling requirements spreadsheet S G:\Environmental\Env Ser - SWaste - Gen\W22 LANDFILL MONITORING PROGRAMS. The Waste Technician and Regulatory Compliance Officer will ensure that the sampling requirements spreadsheet is kept up to date.
- Ensure that the sampling requirements spreadsheets and site maps are in the back of each field book, and are current prior to each sampling event.

Prepare Equipment

- Ensure that you have all equipment on the field equipment list. See Appendix A - Field Sampling Equipment List.
- Equipment must be calibrated according to manufacturer's standards. See Appendix B - Equipment Calibration and Maintenance Protocols for a complete set of maintenance and calibration instructions.
- Sampling bottles should be ordered at least 2 weeks before scheduled field sampling. Sample bottles should be stored primarily at 12 Peel Street in the Waste Management Department, or the Lindsay Ops maintenance building if necessary.
- Check the charge on the phone, GPS, YSI (dissolved oxygen, pH, temperature and conductivity) and gas monitor.
- Inspect your vehicle to ensure you have enough fuel, washer fluid and oil. Also check tire pressure and make note of any other alarms present on the vehicle. It is important to fill out the daily log book located in the vehicle to document the checks being conducted. Do not drive the vehicle if it requires servicing – contact Fleet for assistance.
- Leave the Supervisor of Waste Management Operations with your daily schedule. The Administrative Assistant or Regulatory Compliance Officer should also be informed of your schedule. If you will be working alone, you must follow SOP WM-005 – Working Alone. You are required to contact TAS (1-877-885-7337) when you arrive on-site and when you leave the site.
- Contact the Supervisor of Waste Management Operations or Regulatory Compliance Officer as well as TAS in the case of after-hours sampling. Confirm with the Supervisor of Waste Management Operations or Regulatory Compliance Officer and TAS when you arrive back at the office.
- Ensure that you have your cell phone and that it is fully charged at all times when you are out of the vehicle.

On-site Arrival

- Observe your surroundings. Note if gates and offices (if applicable) are locked if site is not in operation. Contact Supervisor of Waste Management Operations immediately if suspicious activity is noted.
- Honk the vehicle horn if you note bear signs in the area.
- Generally always work from areas of less contamination to areas of higher potential contamination to reduce the possibility of sample cross contamination.
- Sampling should not be conducted during a thunderstorm or other severe weather conditions. If severe weather conditions arise while you are at a landfill follow the SOP WM004 – Extreme Weather.
- Appropriate precautions must be followed in extreme cold/heat conditions. See Appendix D - Health and Safety information.
- Ensure that appropriate PPE is worn for sampling including gloves, steel toed boots, long pants, sunscreen, safety glasses, etc.
- Do not proceed with work in isolated areas if you are uncomfortable with the work. Contact the Supervisor of Waste Management Operations to make alternate arrangements.

SAMPLING

Landfill Gas Monitoring

1. The GMI GT-44 Methane Monitor is a certified Class 1, Div 1 Groups C and D instrument. The GT-44 should be operated and maintained as per manufacture's instructions. See Appendix B for further information; a copy of the manual is available in the Equipment Manuals binder. The monitor uses 3 C batteries as a power source – ensure extra batteries are always available.

2. The GMI GT-44 Gas Monitor can be programmed to read %VOL, %LEL and ppm CH4. Readings should be recorded in %VOL. This can be achieved by placing the monitor in Purge Mode. Record the date, site, monitor number and both the %VOL and the %LEL in the methane field book.

3. You must complete a fresh air calibration before each sampling event. Switch the monitor on in an open environment away from any sources of contamination. The monitor will begin a 30 second warm-up and calibration sequence.

4. If gas monitoring is required, it should be done before water level measurements and shall be taken without the removal of the any dedicated sampling device. Place the tube of the gas meter into the monitoring well. Avoid lowering the tube into the well water; water will damage the meter's sensors. If a release valve is

not available hold your hand over the top of the well ensuring a seal. You must wear latex or protective gloves when putting your hand over the monitoring well. If taking measurements from a dedicated gas monitoring probe, insert the tip of the monitor into the well valve and then open the stopcock. The monitor should be attached before opening the stopcock to ensure there is no release of methane gas.

5. Place the monitor in purge mode and allow the automatic pump to run for at least 30 seconds, or until the gas reading reaches a maximum and then begins to decline. In the field book record the highest %VOL displayed on the meter and determine the %LEL. The maximum reading is stored in the monitor for your reference.

Groundwater

1. Field Book Setup

Monitoring Well Number	Water Level	Well Depth	Casing Volume (WD-WL xF)	Casing Volume x 3	Volume of Water Purged	Sample Collected (2B4B, VOC etc)	Date Sample Collected	Well Condition, Weather, etc.
MW	**WL**	**WD**	**V**	**Vx3**	**Purge**	**Sample**	**Date**	**Comments**
e.g. MW1	6.2	15.2	18.18	54.54	55	2B4B	25-Oct-10	overcast, 25°C, well cap replaced

Table 1: Sample field book format

Pipe Size (inch)	Factor (F)
1/2	0.127
3/4	0.285
1	0.506
1 1/4	0.791
1 1/2	1.140
1 3/4	1.551
2	**2.026**

Table 2: Common factors for determining well volume

2. Water Level Measurements

a. To ensure that water levels are not affected by purging adjacent wells, gas and water levels should be taken from all wells prior to sampling/purging any wells in the area. Sample tubing should not be moved until the gas and water level measurements have been taken.

b. Water level measurements shall be taken without the removal of any dedicated sampling device (tubing and foot-valve arrangements). Disturbing anything in the well including the tubing and foot-valve can alter the water level reading.
c. Rinse the water level meter with distilled water prior to lowering it into the well. Make sure the water meter is on and lower the meter into the well until the meter beeps. The meter can be affected by condensation on the walls of the pipe or conductivity levels, so slightly raise and lower the water meter to be sure of your measurement. Water levels shall be measured with an electric depth gauge to the nearest 0.01 meters.
d. Measurements shall be taken from the top of the monitored well. The measurement will be taken from the top of the PVC casing (well pipe) and not the top of the protective casing. Ensure that the TOP levels are up to date.
e. Water level measurements shall be recorded in the field book for each specific monitor.
f. Switch off the water level monitor and continue lowering the table until it reaches the bottom of the well – the tape should become slack. Raise the tape just until it becomes taught and read the depth from the top of the PVC casing (well pipe). The height of standing water in each well shall be calculated by subtracting the static water level from the total well depth.

3. Purging Procedure

a. Prior to sampling, each well shall be purged to remove stagnant water within the casing.
b. Three casing volumes shall be removed by the dedicated samplers or by use of a bailer from the wells with moderate inflow. The casing volume can be determined by multiplying the height of standing water by F. The casing volume is then multiplied by 3 to determine the purge volume. Record these values in the field book.
c. The volume of water required to be purged is calculated as follows:

Volume (m^3) =3 x (F(m^2) *(Depth of Well-Water Level (m))

Where:

F is equal to the area (F=(3.14 *D^2)/4*1000
D is the diameter measured in meters

d. The purged water shall be measured into a calibrated container (i.e. bucket with known volume) and the volume of water purged shall be recorded in the field book for the specific monitor. Be sure to purge any sediment that may have accumulated at the bottom of the well.
e. Slow inflow monitors shall be purged entirely dry. The volume of purged water shall be recorded in the field book for the specific monitor. Staff should leave

the monitor to recharge and return periodically to the well to attempt to purge the full volume.

f. For slow recharge wells it may be necessary to return the following day to collect your sample.

4. Sampling Procedure

a. Suitable sample bottles (containing pre-measured preservatives, as required) shall be obtained from the analyzing laboratory in advance of the sampling program.

b. Each sample bottle shall be labeled to indicate the project name (landfill site), well designation, date, time of sample collection, and preservatives added.

c. Samples shall be collected by means of the dedicated samplers in all monitoring wells, if present. For slow inflow monitors, samples shall be collected the day following the purging exercise (to permit water-level recovery, if required).

d. Nitrile gloves should be worn when taking any sample. Change gloves for each sampling location.

e. When 3 borehole volumes have been purged sample the groundwater in the following order as necessary:

i. If required, pH, conductivity, and water temperature

ii. VOC glass amber bottles contain preservatives (usually HCl) but need to be filled with no headspace. Carefully fill the VOC bottles to the top without losing the preservative. To help ensure no air in the sample fill the top of the cap with the groundwater as well or ensure there is a convex surface on the mouth of the bottle. After filling the bottle and putting the lid on, invert the bottle and tap the sides to ensure that no air is present in the sample. Add more sample until no air bubbles remain. If a significant volume of water is lost during refilling, the sample must be collected in a new bottle to ensure sufficient preservatives.

iii. Poly Aromatic Hydrocarbons (PAHs) - 1 L amber bottles with Teflon lids.

iv. Pesticides – 1 or 2 unpreserved 1 L amber bottles may be required (depending on the amount of sediment, check with the lab). Fill bottle leaving a bit of headspace to allow for liquid to expand in temperature changes. Ensure that the lip of the bottle and the lid do not come into contact with anything except the sample.

v. Dissolved Organic Carbon (DOC) –bottle may contain preservative

vi. Phenols – glass bottle with preservative (H_2SO_4 or $CuSO_4$)

vii. Mercury – glass bottle contains preservative ($K_2Cr_2O_7$ or HNO_3)

viii. General chemistry is taken in PET bottles with no filtration and no preservative

ix. Inorganic compounds (metals) – PET bottle with acid preservative (often HNO_3). In Ontario metals are measured in the dissolved state so groundwater samples must be filtered. Use a 45 micron filter, ensure that it is placed on the waterra tubing in the correct direction, purge some water though the filter and then fill the bottle. There is a preservative in metals

bottles. Fill the bottle almost entirely but not all the way to the top. If there is a lot of sediment you may require more than one filter. Alternatively you can request lab filtration of the sample but this must be indicated on the sample bottle and the chain of custody and the sample must be collected in an unpreserved bottle.

f. Sampling information shall be recorded in the field book. Information includes the well number, date of sample collection, static water level, well casing volume, purge volume, actual volume of water purged, and any repairs necessary on the well and weather conditions. Take any field notes on the condition of the well or the reason if a sample could not be obtained. A pencil is preferred as it won't smudge if wet.

g. If sampling during the winter ensure that all water is emptied from the waterra tubing before closing the well.

5. Laboratory Procedures

Laboratory sample submission protocols should be confirmed with the laboratory where samples will be shipped to. This information should be known ahead of time.

6. Troubleshooting in the Field

The following are a number of common issues that may be encountered in the field when groundwater sampling.

Issue	Solution
Water level meter won't beep	Check that the meter is on. If the meter is on and will not buzz, try changing the batteries. If the meter still will not buzz, the well may be dry. Attempt purging the well using the dedicated tubing. If no water is present note this in the field book.
Water level meter won't stop beeping	Try rinsing the water level meter with distilled water.
While purging, water stops coming out of Waterra	The foot valve may have become plugged with sediment or small stones or may have fallen off. Remove the waterra (making sure not to rest it on the ground) and inspect the foot valve. If there is no problem with the foot valve, the well may be dry. Confirm this with the water level meter and make note in the field book.
When you remove the well cap the Waterra has slid too far down the PVC casing to grab.	Always carry a coat hanger in your field bag. This can be used to hook and raise waterra that has fallen down the standpipe.
The waterra tubing has split and	If the leak is coming from the connection between

water is spraying out of the side	the large diameter and small diameter tubing, ensure they are connected properly and use electrical tape if necessary. If the leak is coming from other parts of the waterra, cut and replace that section. Depending on where the leak is, you may have to replace the entire length of tubing.
Well has been purged dry and exhibits slow recharge	Move on and complete the remaining wells, returning to the dry well at the end of the sampling day. If the well is still dry, you may have to return the following day to collect the sample. Note this in the field book.

Surface Water

1. Field Book Setup

Your field book should be set up in the following way, prior to heading out into the field:

Station	pH	DO (mg/L)	Cond (uS/cm)	H_2O Temp	Air Temp	Width (m)	Depth (m)	Flow (m/s)	Sample/Date/ Comments
SWA	7.03	2.36	456	14	17	2	1	0.3	2B4B/Aug 3/silty sample

2. Sampling Procedure

a. Sampling should usually be conducted under base flow conditions (to observe maximum quality impact). Thus, there shall be several days without precipitation before the sampling survey. However, sampling of ponding water during stagnant conditions shall be discouraged unless representative of the local conditions. If a sample is collected in a stagnant water body this should be noted in the field book.
b. Confirm the monitoring regime. There are some sites where surface water sampling is specified to occur after a rainfall event (e.g. Lindsay Ops and Verulam surface water sampling).
c. Samples should be collected from the furthest station downstream from the site first and then progress up stream towards the site. This ensures that downstream samples are not affected by disturbances caused from upstream sampling.
d. Ensure that equipment is properly cleaned and gloves are changed between sampling locations, especially prior to taking a background sample.
e. Prior to sampling conduct a visual inspection and take photographs of the site. Label the site and the SW location in the photos once they have been uploaded to the computer in the office. Field measurements shall be taken for temperature, conductivity, pH and DO at each sampling

station when samples are collected for chemical analysis. It is best to take these measurements from a location slightly downstream of your collection location before you take samples to avoid influencing results from disturbances during sample collection. You can also take these measurements after sample collection but in this case they should be taken slightly upstream of the sample collection location.

f. The YSI must be calibrated at the beginning of every day it is being used (see Appendix C). Turn the YSI on 5-15 minutes before use. Allow temperature readings to stabilize. The probe shall be placed perpendicular to flow direction in a flowing stream. In a non-flowing sample, the YSI probe should be stirred at least 6 inches per second (for 1.25 PE membranes). When the DO values plateau and stabilize you may record the measurement in the field book or log the data set. The probe should be completely submerged for accurate conductivity readings; the pH probe may need a bit of time to stabilize so take this reading last.
g. Nitrile or latex gloves should be worn when taking any sample. Change gloves for each sampling location.
h. Samples should not be filtered unless directly indicated in the protocol. The general chemistry bottle can be used to fill bottles with preservatives already in the bottle (bottles with preservative should not be filled directly in the surface water).
i. To take the sample, remove the lid and keep in your fingers of one hand (the lids and mouth of the bottle should only be in contact with the air and sample). Collect the sample from the middle of the stream where possible. Place the sample bottle into the water column facing downwards about half way down the water column. Turn the sample bottle facing upstream to collect the sample.
j. Weather conditions shall be recorded in the field book.
k. Flow measurements shall be recorded after samples have been collected.
    i. For typical stream flow in a distinguished channel, measure the average water depth, stream width, and water velocity using the method below. It is preferable to measure at a minimum of three (3) locations across the stream. The measurement should be taken in an area as straight as possible with similar substrate.
    ii. Flow can also be measured at culverts by taking the depth of the water in the culvert, and diameter of the culvert, and the velocity of the water entering or exiting the culvert.
    iii. Water velocity can be measured by the time it takes a floating object to travel a set distance (orange peel and stop-watch method). Make sure that you measure the distance and have a stop watch to measure the time.
l. Additional observations may include vegetation, substrate, water colour, odour, iron staining, algae etc. All measurements and observations should be recorded in the field book.

m. Any digitally-metered instrument used to obtain field measurements (other than temperature) shall be calibrated before the sampling survey to ensure reliable results.

Lindsay OPS Stormwater Sampling

Lindsay OPS Stormwater sampling at SW14, SW15 and SW18 must be completed following at least four storm events producing surface water runoff in the spring, summer and fall. At each station, one sample is collected to measure pH using a general chemistry bottle, one sample is collected to measure for ammonia using a nutrients bottle, and an additional sample is collected to conduct an on-site ammonia reading using a general chemistry bottle. One general chemistry bottle and one nutrients bottle will be sent to the lab for certified analysis of pH and ammonia.

When each station has been sampled, immediately bring the additional sample bottle collected to the Lindsay Ops Administration Building. There is a LaMotte Ammonia-Nitrogen kit kept on-site for analysis. Proper PPE, including safety glasses and nitrile gloves should be worn during this procedure. The test kits contain reagents that may be harmful if you come in contact with them.

The following is the procedure for the Ammonia-Nitrogen Kit:

a. Insert the Ammonia Nitrogen Octa-Slide 2 Bar into the Octa-Slide 2 Viewer.
b. Fill a test tube to the 5 mL line with the water sample.
c. Add 10 drops of Salicylate Ammonia #1. Cap the test tube and mix thoroughly.
d. Add 7 drops of Salicylate Ammonia #2. Cap the test tube and mix thoroughly.
e. Wait 1 minute. Add 7 drops of Salicylate Ammonia #3. Cap the test tube and mix thoroughly. Wait 20 minutes.
f. Insert the test tube into the Octa-Slide 2 Viewer. Match the sample colour to a standard colour. Record as ppm of ammonia nitrogen.

Follow the laboratory submission protocol. It is imperative to request that laboratory analysis is completed as quickly as possible.

Leachate Pumping Chambers

Field Book Setup

Your field book should be set up in the following way prior to heading into the field:

Station	pH	Cond (uS/cm)	H_2O Temp	Air Temp	Sample/Date/ Comments
LPC WPCP	7.03	456	14	17	2B4B/Aug 3/orange colouration

1. Lindsay Ops and Lindsay St. North Leachate Pumping Chambers

- Open chamber lid.
- Lower dedicated bailer attached inside the chamber to collect water sample. Lift and lower the bailer until it is full.
- Fill an extra PET bottle with a representative sample of leachate and use the YSI to record sample temperature, pH, DO and conductivity in the field book.
- Samples can be collected directly from the bailer into sample bottles.
- Metals must be collected in an unfiltered metals bottle which must be lab filtered and preserved. This should be indicated on the bottle and laboratory submission sheet.
- Ensure that after sample collection the bailer is emptied and securely tied to the top of the chamber to avoid fouling in the chamber.
- If a bailer is not available use a large bucket to collect a sample. Ensure that the rope on the bucket is secured to something before lowering the bucket into the chamber.

2. Emily Purge Wells

When the system is not turned off and the system is in use, sampling protocol for the purge wells are as follows:

- All pumps should be placed in the off position.
- Open TW1 slightly and turn on Pump 1. Allow TW1 to flush to the lagoons for at least five minutes. This will help dislodge any sediment that has become trapped in the pipes. Once complete turn off Pump1.
- The backflow valve should be closed to prevent water from the force main back flowing into your sample.
- Open the ball valve for TW1 slightly to avoid build up of pressure in the pipes when collecting the sample.
- Turn on TW1 and open the upper tap. Run the tap into a bucket until it runs clear. There is sometimes build up of iron in the pipes that comes loose when the taps are opened.
- After you have run the tap, collect your samples. When you are done collecting the sample turn off the tap and the pump.
- It should be indicated on the bottle and laboratory submission sheet that the sample could not be filtered.
- Follow the same procedure for TW2 and TW3 using the middle and bottom taps, respectively.
- For the composite sample, use the procedure outlined above to fill each sample bottle 1/3 with a sample from each TW. You can fill the combined bottles at the same time as you are filling the sample bottles for each TW.

- To restart the collection system, open the force main valve. Then start all the pumps and follow the procedures outlined in the Emily Operations Manual to set the optimal flow rates for each pump.

Residential

- If possible, notify resident of sampling prior to your arrival at their house. When you arrive at their home, knock on the door and identify yourself as a City employee conducting water sampling, and ask if it is a convenient time to take a sample. If resident is not home but received prior notification, proceed with sampling.

- Ensure sampling location is of raw water (water not treated by a water softener or other treatment device).

- Run the tap for 3-5 minutes prior to sampling. Generally it is good to direct the water away from the foundation of the house with a hose or bucket with running the tap. The home owner may have specific requests which will be noted in the sampling requirements per site sheet.

- Prior to collecting the sample, remove hose if taking sample from an outside tap.

- Take sample.

- Place sample in cooler with ice for transport back to office.

- If taking a sample for bacteria, please follow the directions for sampling and submission provided by the Health Unit with the sample bottle.

- See the residential section of Laboratory Procedures.

Compost

- Samples are to be taken and submitted for analysis once the compost has finished curing and it is ready to be moved. Take 10 grab samples from diverse points within the compost pile; dig in at least 1 meter into the pile.
- Each grab sample will contain a minimum of 20 liters (one pail, ensure pail/ tools are clean).
- Mix the 10 grab samples in a separate pile, and from that pile, take one sample for submission to the laboratory.
- Sample will be sent to Caduceon laboratory for compost analysis.

- Samples are to be contained in a clean PET bag, PET bottle, or glass jars and submitted for analysis for the parameters listed below.
- Currently Caduceon laboratory will provide 2 glass jars (one for metals and one for particle size) for the analysis.

Table 3: Ontario Compost Quality Standards, July 2012

Parameter	Category AA	Category A	Category B
	ppm = mg/kg = ug/g		
Arsenic	13	13	75
Cadmium	3	3	20
Chromium	210	210	1060
Cobalt	34	34	150
Copper	100	400	760
Lead	150	150	500
Mercury	0.8	0.8	5
Molybdenum	5	5	20
Nickel	62	62	180
Selenium	2	2	14
Zinc	500	700	1850
Foreign matter particles greater than 3mm	1%	1%	2%
Plastic foreign matter	0.5%	0.5%	0.5%
Sharp foreign matter	No material that can reasonably cause injury	No material that can reasonably cause injury	Max. 3 pieces/500 ml, Max. 12.5 mm in size
Pathogen Testing (SSO only) Fecal coliforms	<1000 MPN/g of total solids on dry weight basis	<1000 MPN/g of total solids on dry weight basis	<1000 MPN/g of total solids on dry weight basis
Pathogen Testing (SSO only) Salmonellae	<3 MPN/4g total solids calculated on dry weight basis	<3 MPN/4g total solids calculated on dry weight basis	<3 MPN/4g total solids calculated on dry weight basis

LABORATORY PROCEDURES

Laboratory procedures are subject to change with a new lab. Procedures should be confirmed with the lab if there are any changes in laboratories.

Groundwater and Surface Water

- QA/QC procedures (i.e. number and type of field and spiked blanks) shall be determined by prior consultation with the laboratory representative. Current practice is 1 duplicate sample taken for every 10 samples collected. Additionally, one travel blank should be included for every couple of sites.

- Place samples into a cooler with pre-frozen ice packs and if possible send the samples to the lab the same day or next morning. Surface water samples must be sent to the laboratory within 48 hours of sample collection because of BOD holding times. Groundwater samples may be kept up to a maximum of 72 hours before they are sent to the laboratory.

- Samples must maintain a temperature below 10°C. Coolers (or samples) must be stored in fridge at Lindsay Ops if keeping overnight. If they cannot be stored in the fridge, make sure to add extra ice in the coolers for overnight keeping, and ensure more ice is added in the morning.

- A chain of custody form shall be completed and submitted together with the samples to the laboratory. A copy of the chain of custody shall be retained by the sample collector.

- Surface water samples should not be sampled on Friday as the sample will not get to the laboratory before holding time expires. Laboratory holding times for samples are currently as follows:

Table 4: Laboratory holding times

Parameter	Days
ICP Metals	60
Mercury	14
Nitrite	7
Nitrate	7
Fluoride	30
Turbidity	7
Alkalinity	14

Chloride	30
Sulphate	30
DOC	5
TDS	7
pH	ASAP
BOD	5
VOC	14

Residential Well Sample Submission

- Residential well samples must be submitted to the laboratory as soon as possible after sampling. Bacti samples are to be submitted to the health unit as soon as possible. Samples cannot sit over the weekend and cannot be shipped on a Friday.

- Complete the chain of custody ensuring all the required information is completed. There may be specific forms from the lab for submitting residential drinking water samples.

- Pack samples in a cooler with LOTS of ice and ship via courier. Residential samples must be 5°C upon receipt at the laboratory.

POST MONITORING PROCEDURES

Groundwater

- Ensure that all equipment is cleaned and stored in the equipment area at Lindsay Ops.
- Transfer water level information into the field notes folder in the G drive. Go to G:\Environmental\Env Ser - SWaste - Gen\W22 LANDFILL MONITORING PROGRAMS.
- If monitoring well repairs are required note these in the MW repair excel sheet in the G drive. Go to G:\Environmental\Env Ser - SWaste - Gen\W22 LANDFILL MONITORING PROGRAMS and select the excel sheet for the appropriate year entitled Monitoring Well Repairs.

Surface Water

- Ensure that all equipment is clean and stored in the equipment area at Lindsay Ops. The YSI and calibration solutions should be stored inside at 12 Peel Street with the Waste Management Department.

- Transfer surface water information into the field notes folder in the G drive. Go to G:\Environmental\Env Ser - SWaste - Gen\W22 LANDFILL MONITORING PROGRAMS.
- Copy pictures into the SW photo folder for the appropriate site in the G drive. Ensure that the date of the picture is included in the name.

Landfill Gas

- Transfer methane information into the field notes folder in the G drive. Go to G:\Environmental\Env Ser - SWaste - Gen\W22 LANDFILL MONITORING PROGRAMS.

Monitoring Well Repairs

- Monitoring wells should be repaired on a regular basis. Repairs include fixing the waterra tubing, fixing loose casings, cutting down well PVC pipe if the casing has sunk and won't close, extending the well if it is too short. etc.
- All repairs should be documented in the monitoring well repairs excel spreadsheet in the landfill general folder in the G drive.
- For some repairs, it may be necessary to contract a licensed well technician to complete the work. Refer to O Reg. 903 for more information.
- **Be sure to measure the length of PVC that is being extended or cut and adjust the well depth in the field book accordingly.
- **Any changes to the elevation of the pipe must be carried out by a certified well technician and must be indicated to the Regulatory Compliance Officer so a new TOP elevation can be surveyed at the end of the year

Appendix A – Field Sampling Equipment List

All sampling

- Site keys
- Location maps and field sheets
- GPS and locations for the site
- Mobile phone equipped with a camera, or digital camera
- Bear deterrents (bear spray, fog horn, whistle, etc.)
- Cell phone
- Small knife
- Tool box and socket set
- PPE (gloves, bug spray, sunscreen)
- Biodegradable detergent
- Distilled water
- Sharpies
- Hand wipes/hand sanitizer
- Pencils
- Electrical tape
- Measuring tape
- Watch or mobile phone displaying time
- Paper towel

Groundwater monitoring

- Water level indicator (extra C batteries)
- Sampling bottles
- Purging buckets – at least 2 marked with volumes (i.e. 4L, 8L, etc)
- Filters for GW samples
- Additional tubing and foot valves
- Calculator
- Field book
- Coat hanger or threaded rod
- Extra locks and well caps

Surface water monitoring

- Sampling bottles
- YSI meter (extra AA batteries)
- Calibration solutions and distilled water
- Swing sampler
- Mobile phone equipped with camera, or digital camera
- Hip waders
- Rubber boots
- Field book

Gas monitoring

- Methane monitoring device (GMI GT-44)
- Extra C batteries
- Methane field book

Monitoring well repairs

- Hand held electric saw
- Casing caps and collars
- Well caps
- Bucket
- Concrete
- Bentonite
- Waterra tubing (high and low density)
- Foot valves
- PVC pipe
- Ski pole
- Orange spray paint
- Locks

Appendix B – Equipment Calibration and Maintenance Protocols

YSI

For detailed information on YSI please consult the Professional Plus User Manual.

General Use

- The YSI should be calibrated at the beginning of every day that it will be used.
- Prior to departing for field work the protective sleeve can be removed and the field sleeve can be attached.
- Upon return from the field the probe should be rinsed with clean water.
- At the end of every day the probe should be stored with a damp sponge in the bottom of the storage sleeve, or a small amount of water is to be added to the storage sleeve if no sponge is present. The YSI and calibration solutions should be stored in a temperature regulated room. Check the acceptable range for storage on the calibration solution bottles.
- Calibration solutions should be transferred into smaller glass jars to avoid contaminating the entire bottle of solution. Jars should be labeled with the name and concentration of solution as well as the date of transfer and expiry date.

Calibration and Maintenance

- DO Meter

- Follow the “Calibrating DO % in Water Saturated Air: 1 Point Calibration” as described in the Professional Plus YSI user manual (pg 27) and below:
- The supplied sensor storage container (a screw on plastic cup) can be used for DO calibration purposes
- Moisten the sponge in the storage sleeve or plastic cup with small amount of clean water. The sponge should be clean since bacterial growth may consume oxygen and interfere with the calibration. If using the cup and you no longer have the sponge, place a small amount of clean water (1/8 inch) in the plastic storage cup instead.
- Make sure there are no water droplets on the DO membrane or temperature sensor. Then install the storage sleeve or cup over the sensors. The storage sleeve ensures venting to the atmosphere. If using the cup, screw it on the cable and then disengage one or two threads to ensure atmospheric venting. Make sure the DO and temperature sensors are not immersed in water. Turn the instrument on and wait approximately 5-15 minutes for the storage container to become completely saturated and to allow the sensors to stabilize.
- Pres Cal. Highlight probe ID (which must be enabled in the GLP menu to appear in calibration menu).
- Highlight DO % and press enter to confirm.
- Wait for the temperature and DO % values under “actual readings” to stabilize then highlight accept calibration and press enter to calibrate. Or press Esc to cancel calibration.
- The potassium chloride solution and membrane cap should be changed at least every 30 days during regular use.

- Conductivity

- Follow the “Calibrating in Specific (Sp.) Conductance or Conductivity” as described in the Professional Plus YSI manual (pg 36) and below:
- Press Cal. Highlight Probe ID
- Place the sensor into a fresh, traceable conductivity calibration solution. The solution must cover the holes of the conductivity sensor that are closest to the cable. Ensure the entire conductivity sensor is submerged in the solution or the instrument will read approximately half the expected value
- Choose the units in SPC-uS/cm
- Highlight Calibration Value and press enter to input the value of the calibration standard
- Once the temperature and conductivity readings stabilize highlight accept calibration and press enter or press esc to cancel

- The openings that allow sample access to the conductivity electrodes should be cleaned regularly (small cleaning brush included in the maintenance kit). Dip the brush into clean water and insert into each hole 10 to 12 times.

  - pH

- Follow the instructions “Calibration pH” as described in the Professional Plus SI user manual (pg40).
- Press Calc. Highlight probe ID
- Highlight ISE (pH) and press enter. The message line will show the instrument is “Ready for point 1” (The pH calibration allows up to six points)
- Rinse the sensor with distilled water and pat dry before placing in the buffer solution.
- Place the sensor in a traceable pH buffer solution. The value of the buffer should show up at the top of the calibration screen. If not, highlight calibration value and enter it manually.
- Once the temperature and pH readings stabilize press accept calibration.
- The probe should be rinsed with distilled water and patted dry in between buffer solutions.
- To continue with the second point, place the sensor in the second buffer solution. Again this buffer solution should be recognized or entered manually.
- Once the pH and temperature have stabilized press accept calibration and press enter.
- If you do not wish to perform a 3rd calibration point press cal to complete the calibration.

Barometer

- Do not calibrate the barometer unless you have specific reason to believe that the values are untrue. If calibrating the barometer carefully follow the instructions in the Professional Plus YSI user manual (pg 32).

GMI GT-44 (Methane Monitor)

For detailed information on the GT-44 please consult the GMI GT Series User Handbook – CSA.

General Use

- To turn the unit on hold the PUMP button down for 1 second. The instrument will ask you if all filters are installed and in good condition – check that they are and then select YES.
- The unit will then ask you if you would like to perform a flow fault test. Place your finger over the sensor. The monitor should read successful – select yes to continue.

- Fresh air calibration should be conducted at the beginning of every sampling day. The monitor will do this automatically, counting down from 30 in the top right hand corner.
- The following different modes will read methane concentration in these units:
    - Confined space - %LEL
    - Barhole – 0-100% LEL ; 0-100% VOL
    - Purge – 0-100% VOL
    - Sniffer - ppm CH4
    - Leak Test – ppm CH4
- For best results, the monitor should be operated in Purge mode as methane readings must be recorded in %VOL. However, if you would like to identify very small methane concentrations, the monitor can be placed in sniffer or leak test mode and ppm CH4 can be easily converted to %VOL using the following equation:

%VOL methane = ppm/10,000

- To switch between operation modes, press and hold both the INVERT and PUMP buttons at the same time.
- The max/live or min/max methane readings can be seen by pressing and holding the INVERT button (only available in confined space or leak test mode). To return to live readings press and hold the INVERT button again.
- The automatic pump can be turned on and off by pressing the PUMP button.
- To turn the monitor off, press and hold the INVERT and PUMP button simultaneously while the monitor counts down from 3.

Calibration

- To conduct a Fresh Air calibration, turn the monitor on – the monitor will automatically begin the fresh air calibration and warm up sequence.
- If the instrument reads error please refer to the Instruction manual or call a service technician.
- The unit is to be calibrated when Hetek Solutions Inc. is on site for gas detection calibration at the Lindsay Ops Landfill.

Compost Thermometer

Please refer to Recalibrating your Reotemp Dial Compost Thermometer information sheet for more information.

- To calibrate the thermometer prepare a Reference Bath**.** You will need a bath of water of a known temperature. You can use ice water for any range that includes 0°C. The ice bath should be mostly ice, with just enough water to fill the spaces.
- You can use any other temperature bath (room temperature is most convenient, but your working temperature will be most effective), if you have another reference thermometer that you know is accurate.
- The reference bath should be at least 4 inches deep (6 or more inches is better.) If the reference bath is water at room temperature, use a big container, like a bucket.

- The bath should be agitated (stirred) just before or during calibration (boiling water will do its own agitation).
- If you are using a reference thermometer, place the Unit under test (UUT) right next to the reference unit (REF). You can even strap them together with a small rubber band. The UUT should be immersed at least 4 inches into the bath, as the sensitive portion of the thermometer is in the last 2-3 inches of the stem.
- Leave the UUT in the bath for at least a minute, to make sure temperatures have stabilized. Then rotate the small (1/4”) hex screw head on the back of the dial case of the UUT until the pointer is indicating the proper temperature. You can use a flat screwdriver, or a small coin, or pliers to rotate the screw head. Once the UUT and REF thermometers agree, you are done!
- If your thermometer will not recalibrate, it may need factory repair. (If the stem is bent, it cannot be repaired, and must be replaced). Contact our factory at 858-784-0710, or fax us at 858-784-0720, or email (sales@reotemp.com) to discuss repair/replacement options.

Appendix C – Contact Information

City of Kawartha Lakes Contact List

Name	Position	Number (705) 324-9411 ext:	Cell
Heather Dzurko	Supervisor of Waste Management Operations	1133	705-328-4263
Kerri Snoddy	Regulatory Compliance Officer	2360	705-879-2666
Nikki Payne	Waste Technician	1144	705-928-3056
David Kerr	Manager Environmental Services	1118	705-340-3448

Repair and Maintenance Contact List

Company Name	Contact Name/Information	Number	Email	Equipment
Coe Fisher Cameron	Herman Wimmelbach or Geoff Lees	705-324-4152	geoff@coefishercameron.com	Surveys
Sitech	Spencer Wykes	905-669-4773(w) 416-436-3241(c)	spencer.wykes@sitechmidcanada.com	Trimble GPS unit
Hart & Sons Drilling	Clark Watson	887-3331		Monitoring well repairs
Kevin Keenan	Keenan Electric	878-2111		Electrician for Emily (set up spray irrigation times etc.)
Tom Taylor	Taylor Electric	705-878-6050		Emily electrical
Steve Walsh	Walsh's welding	705-328-0738		Welding repairs of Emily irrigation system
Christie Mechanical	Christie Mechanical (7415 Highway 9 Rr	519-943-0506		Emily Rotork Valves: for replcement only

	1, Palgrave L0N 1P0, ON			
Syntec Maintenance	Steve Stoll	905-951-8000	steve@syntecpe.com	Emily Rotork Valves: for information/support
Hetek Environmental Solutions	Karl Stoute, Account Manager - GTA	519-659-1144	karl.stoute@hetek.com	GMI GT-44 Methane Monitor Calibration and Support

Equipment Supplies Contact List

Company Name	Contact Name/ Information	Number	Email	Equipment
Hoskin Scientific	Natalia Lecki 4210 Morris Dr. Burlington	905-333-5510 x 232	nlecki@hoskin.ca	Calibration Solutions for YSI and other environmental monitoring equipment
Desco Plumbing and Heating Supply Inc.	39 Colborne St. East Lindsay	705-324-9421		Plumbing supplies
Solinst Canada Ltd.	35 Todd Rd Georgetown, ON	1-800-516-9081	john.buckley@solinst.com	environmental monitoring equipment
Pine Environmental Services	Aimee Fossett or Grahamn Johnstone, 6380 Tomken Rd. Mississauga	905-795-9700	gjohnstone@pine-environmental.com	renting water level meter, other equipment
Maxim Environmental & Safety	Paul Coulombe, 170 Ambassador ON	1-888-285-2324	paul@maximenvironmental.com	environmental monitoring equipment
Osprey Scientific	Claire Aucott, Mississauga	905-820-3122	caucott@ospreyscientific.com	environmental monitoring equipment

Appendix D – Health and Safety Information

Every field sample technician should be aware of the hazards of working in the outdoor environment. Please consult the following information included in the protocol and ask any questions if you feel additional information should be included.

Confined Space Entry

- Consult the City Policy number M-HR-003.

Bear Spray

- Consult the Bear Spray fact sheet included in this appendix. Detailed information about being bear safe can be found on the MNR website.
- http://www.mnr.gov.on.ca/en/Business/Bearwise/index.html

Heat and Cold

- Consult the Working in Hot and Cold Temperatures SOP WM025.

Plants to avoid

- Consult the plants to avoid information sheet included in G:\Environmental\Env Ser - SWaste - Gen\W22 LANDFILL MONITORING PROGRAMS.

APPENDIX C

Borehole Logs

GROUND WATER MONITOR DETAILS

BOREHOLE NO	MONITOR NO	MONITOR TYPE	DIAMETER (mm)	GROUND ELEVATION (m.a.s.l.)	SCREENED INTERVAL ELEVATION m.b.g.l.	FILTER PACK ELEVATION m.b.g.l.	SEAL ELEVATION m.b.g.l.	CAVE-IN ELEVATION m.b.g.l.	BACKFILL ELEVATION m.b.g.l.
1-90 *	I	P	50	256.91	9.66 - 8.14		0.46 - 0.0	9.66 - 5.49	3.66 - 0.46
1-90	II	S	50	256.96	4.64 - 3.12		0.15 - 0.00	4.64 - 3.66	3.66 - 0.15
2-90 *	I	P	50	256.58	8.77 - 7.25	8.77 - 7.32	1.47 - 0.00	7.32 - 1.47	
2-90	II	S	50	256.52	4.63 - 3.11		0.59 - 0.0	4.63 - 2.29	2.29 - 0.59
3-90 *	I	P	50	256.13	6.83 - 5.31	6.96 - 5.61	0.46 - 0.00 5.61 - 5.44	5.44 - 3.48	3.48 - 0.46
3-90	II	S	50	256.21	3.79 - 2.27	3.79 - 2.21	0.20 - 0.00 2.21 - 1.83		1.83 - 0.20
4-90 *	I	P	50	256.29	6.22 - 4.70	6.34 - 5.73	0.76 - 0.00	5.73 - 1.60	1.60 - 0.76
4-90	II	S	50	256.37	3.64 - 2.12	3.76 - 2.06	0.46 - 0.00 2.06 - 1.60		1.60 - 0.4
5-90 *	I	P	50	256.35	5.93 - 4.41	6.05 - 4.45	0.53 - 0.00 4.04 - 3.73	4.45 - 4.04	3.73 - 0.53
5-90	II	S	50	256.29	3.95 - 2.43	4.12 - 2.13	0.59 - 0.00 2.13 - 1.60		1.60 - 0.59
6-90 *	I	S	50	261.87	5.96 - 4.44	6.17 - 4.42	0.53 - 0.00	3.05 - 2.06 4.42 - 4.11	2.06 - 0.53 4.11 - 3.05
7-90 *	I	S	50	265.76	7.57 - 6.05	7.57 - 5.31	0.56 - 0.00	5.31 - 4.93	4.93 - 0.56

P - Piezometer S - Standpipe

m.b.g.l. - Metres Below Grade Level
m.a.s.l. - Metres Above Sea Level
* ins' ''ed ' lag('lim' 'mit '

JAGGER HIMS LIMITED
CONSULTING ENGINEERS

BOREHOLE NO. 1-90

PROJECT NAME LINDSAY LANDFILL SITE — **PROJECT NO.** 90179.00

CLIENT HYDROTERRA LIMITED — **DATE** April 23 to April 24, 19

BOREHOLE TYPE 83 mm I.D. Hollow Stem Augers and 114 mm Standard Auger — **FIELD SUPERVISOR** FB

GROUND ELEVATION Monitor I - 256.91 m.a.s.l. Monitor II - 256.96 m.a.s.l. — **ENGINEER** AGH

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS I	MONITOR DETAILS II	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % / W P — W L	REMARKS
0.1	BLACK SILTY TOPSOIL											
	SILT TILL Mottled brown with grey streaks silt till with some sand, trace clay, some root fibres at the top; becoming dark yellowish brown, some gravel at ± 1.4 m, moist to wet; compact becoming loose at ± 1.5 m				SS1	10	14					Monitor II is installed in separate bore Mixture of 3M silica sand a native materi were added to borehole as backfill mate
±2.1					SS2	15	12					
	SANDY SILT TILL Dark yellowish brown with rusty stains fine sandy silt till with trace to some gravel trace clay , a grey silt layer at ± 2.9 to 3.3 m, less gravel below ± 3.3 m, encountering occasional sand and silt seams < 1 mm thick, and laminated at ± 4.6m, boulder at ± 5.3m, wet, becoming wet to saturated at 3.1 m; compact becoming dense at ± 3.8m.				SS3	9	9					
					SS4	26	10					
					SS5	21	20					
					SS6	38	9					
±5.6					SS7	31	12					
	SILTY SAND TILL Grey silty fine sand till some gravel, and trace clay; moist to wet; very dense. Increase gravel content at depth.				SS8	100 for 150 mm	7			100/150 mm →		Grain Size Gravel 28% Sand 34% Silt 29% Clay 9%
					SS9	110 for 100 mm	7			110/100 mm →		Grain Size Gravel 15% Sand 40% Silt 32% Clay 13%
±9.8m					SS10	52 for 150 mm	7			52/150mm →		Grain Size Gravel 49% Sand 23% Silt 19% Clay 9%
	Borehole terminated at ± 9.8 m at auger refusal											

JAGGER HIMS LIMITED
CONSULTING ENGINEERS

BOREHOLE NO. 2-90

PROJECT NAME LINDSAY LANDFILL SITE
PROJECT NO. 90179.00
CLIENT HYDROTERRA LIMITED
DATE April 24 and May 23, 19
BOREHOLE TYPE 83mm and 108mm I.D. HOLLOW STEM AUGERS
FIELD SUPERVISOR FT
GROUND ELEVATION Monitor I - 256.58 m.a.s.l. Monitor II - 256.52 m.a.s.l.
ENGINEER AGH

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS I	MONITOR DETAILS II	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT %	REMARKS
±0.2	BLACK SILTY TOPSOIL											Monitor II is installed in a separate bore
±0.6	SILT - Dark brown trace gravel and clay; some organic fibres, fine sand seam < 1mm thick, wet to saturated, loose.				SS1	10	17					
1 ±1.0	Clayey Silt trace fine sand seam < 1mm thick, mottled grey, rusty stains, laminated.				SS2	17	19					Mixture of 3M silica sand a native materi were added to borehole as backfill mate
±1.8	SILTY SAND Dark yellowish brown silty fine sand, trace fine gravel, medium to coarse sand layer at ±1.4 to ±1.8m, wet to saturated becoming saturated at ±1.5m; compact.				SS3	28	14					Sample 3 Gravel 31% Sand 48% Silt 18% Clay 3%
2	SILTY SAND TILL Dark yellowish brown becoming grey at ±2.7m, silty fine sand till some gravel, fine to coarse sand with black specks, and layers of silt with trace of sand and fine gravel at ±2.9m to ±3.7m, moist to wet, changing to saturated at ±2.9m, becoming moist to wet at ±3.8m; dense to compact becoming very dense at ±3.8m.				SS4	32	17					
3					SS5	20	17					
4					SS6	83	7			83 →		
5					SS7	50 for 150mm	4			50/150mm →		
6												
7					SS8	87 for 150mm	7			87/150mm →		
8					SS9	67 for 150mm	2			67/150mm →		
9 ±9.0					SS10	52	6			52 →		
	Borehole terminated at ±9.0 m at auger refusal on assumed bedrock.											

JAGGER HIMS LIMITED
CONSULTING ENGINEERS

BOREHOLE NO. 5-90

PROJECT NAME: LINDSAY LANDFILL SITE
PROJECT NO.: 90179.00
CLIENT: HYDROTERRA LIMITED
DATE: May 24, 1990
BOREHOLE TYPE: 108mm I.D. HOLLOW STEM AUGERS
FIELD SUPERVISOR: FB
GROUND ELEVATION: Monitor I - 256.35 m.a.s.l. Monitor II - 256.29 m.a.s.l.
ENGINEER: AGH

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS I	MONITOR DETAILS II	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE ROD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT %	REMARKS
±0.4	BLACK SILTY TOPSOIL											Monitor II is installed in a separate boreh
	CLAYEY SILT Black and dark brown becoming mottled brown at ±0.8 m, rusty stains, clayey silt and silty topsoil at top, clayey silt trace gravel and fine sand, laminated saturated; loose.				SS1	7	26					
±1.2					SS2	11	13					
	SILTY GRAVELLY SAND TILL Mottled dark yellowish brown and grey, becoming dark yellowish brown with rusty marks at ±2.3 m, changing to grey at ±3.1 m, silty gravelly sand till, having variable gravel below ±1.4 m, wet, becoming moist-wet at ±1.5 m, compact to dense, becoming very dense at ±2.3 m.				SS3	48	8			98		Mixture of 3M silica sand an native materia were added to borehole as backfill mater
					SS4	50 for 75 mm	6			50/76mm		GRAIN SIZE Gravel 34% Sand 34% Silt 23% Clay 9%
					SS5	50 for 76mm	7			50/76mm		GRAIN SIZE Gravel 31% Sand 34% Silt 26% Clay 9%
					SS6	55 for 152mm	5			55/152mm		GRAIN SIZE Gravel 36% Sand 32% Silt 23% Clay 9%
					SS7	55 for 152mm	9			55/152mm		GRAIN SIZE Gravel 53% Sand 20% Silt 18% Clay 9%
±6.1m	Borehole terminated at ±6.1 m at auger refusal on assumed bedrock.											

JAGGER HIMS LIMITED
CONSULTING ENGINEERS

BOREHOLE NO. [illegible]

PROJECT NAME LINDSAY LANDFILL SITE
PROJECT NO. 90179.00
CLIENT HYDROTERRA LIMITED
DATE May 24, 1990
BOREHOLE TYPE 108mm I.D. HOLLOW STEM AUGERS
FIELD SUPERVISOR [illegible]
GROUND ELEVATION 261.87 m .a.s.l.
ENGINEER AGH

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE ROD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % W P / W L	REMARKS
±0.9	FILL: Earth fills mixed with trace to some refuse.										Mixture of 3M silica sand a native materi were added to borehole as backfill mate
	REFUSE Mixed and variable garbage.										
±5.6m	≥256.27										
	SILTY SAND TILL Dark yellowish brown, silty fine sand till, moist; compact.										
±6.6m				SS1	17	5					
	Borehole terminated at ±6.6m in silty sand till.										

JAGGER HIMS LIMITED
CONSULTING ENGINEERS

BOREHOLE NO. 7-90

PROJECT NAME LINDSAY LANDFILL SITE — **PROJECT NO.** 90179.00

CLIENT HYDROTERRA LIMITED — **DATE** May 25, 1990

BOREHOLE TYPE 108mm I.D. HOLLOW STEM AUGERS — **FIELD SUPERVISOR** FB

GROUND ELEVATION 265.76m .a.s.l. — **ENGINEER** AGH

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE ROD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % W P / W L	REMARKS
0	FILL Farth fills mixed with some black asbestos at ±0.9m.										Mixture of 3M silica sand ar native materi were added to borehole as backfill mate
1											
2 ±2.1m											
	REFUSE Mixed and variable garbage.										
3											
4											
5				SS1	-	-					
6											
				SS2	-	-					
7 ±7.1	298.66										
	SILTY SAND TILL Dark yellowish brown with a green hue, silty fine sand till, gravelly, wet; compact.										
8 ±8.1				SS3	29	5					
	Borehole terminated at ±8.1m in silty sand till.										
9											

Ontario Environment

1 PRINT ONLY IN SPACES PROVIDED
2 CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT	TOWNSHIP BOROUGH CITY TOWN VILLAGE	CON (BLOCK TRACT SURVEY ETC.)	LOT
Victoria	Ops Twp. (Hole#1)	con. 6	26

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
Town of Lindsay	Lindsay, Ontario	DAY 11 MO 07 YR 90

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FEET FROM	DEPTH FEET TO
Brown	Clay	silt, fine gravel, stones	loose, soft	0	17
Gray	Clay	silt, fine gravel, stones	soft	17	29½
Gray	Limestone		hard	29½	39

WATER RECORD

WATER FOUND AT FEET	KIND OF WATER	
31	☒ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS

CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH FEET FROM	DEPTH FEET TO
6½	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC	.188	+ 1½	29½
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			

SCREEN

SLOT NO. OF OPENING (SHOW NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET

PLUGGING & SEALING RECORD

DEPTH SET AT FEET FROM	DEPTH SET AT FEET TO	MATERIAL AND TYPE (GIVE AMOUNT OF LEAD OR MUD SLURRY)
0	20	Bensaal & Mud Slurry

PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
☒ PUMP ☐ BAILER	10 GPM	21 HOURS 30 MIN.

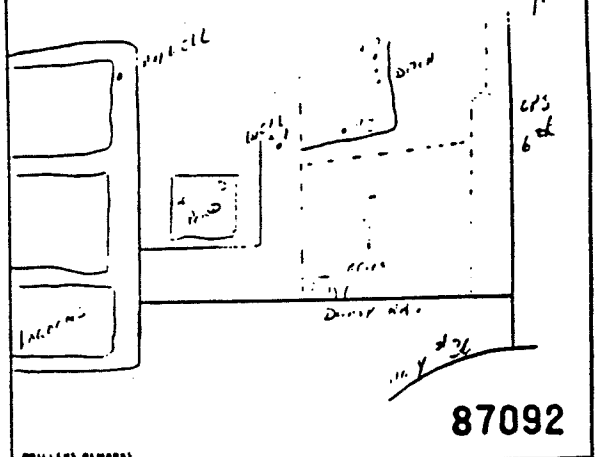
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 10 MINUTES	20 MINUTES	30 MINUTES	40 MINUTES	☒ PUMPING ☐ RECOVERY
3.58 mbtoc	21.28 mbtoc	18.54 mbtoc	19.50 mbtoc	20.14 mbtoc	20.34 mbtoc	

IF FLOWING GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST ☒ CLEAR ☐ CLOUDY
GPM	37 FEET	

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	37 FEET	10 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



87092

DRILLER'S REMARKS

FINAL STATUS OF WELL	☐ WATER SUPPLY ☒ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL ☐ ABANDONED INSUFFICIENT SUPPLY ☐ ABANDONED POOR QUALITY ☐ UNFINISHED ☐ DEWATERING
WATER USE	☐ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☐ COMMERCIAL ☒ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☐ OTHER ☐ NOT USED
METHOD OF CONSTRUCTION	☒ CABLE TOOL ☐ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☐ ROTARY (AIR) ☐ AIR PERCUSSION ☐ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR	WELL CONTRACTOR'S LICENCE NUMBER
C. Hart & Sons Well Drilling Ltd.	2662
ADDRESS: Box 850, R.R.#1, Fenelon Falls, Ontario	
NAME OF WELL TECHNICIAN	WELL TECHNICIAN'S LICENCE NUMBER
Greg Bullock	
SIGNATURE OF TECHNICIAN/CONTRACTOR	SUBMISSION DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

Borehole 8-90

FORM NO 0506 (11/86) FORM 8

OWNER'S COPY

Ontario of the Environment

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT	TOWNSHIP BOROUGH CITY TOWN VILLAGE	CON BLOCK TRACT SURVEY ETC	LOT
Victoria	Ops Twp., Lindsay Landfill (8-90)	Con. 6	26
OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED	
Town of Lindsay	Lindsay, Ontario	DAY 18 MO 02 YR 93	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
		*Previously drilled 39 ft.	(see Record #87092)		
				39	60
Gray	Limestone				

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
4	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE ☐ PLASTIC		39	60
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			

SCREEN

NUMBER OF OPENINGS (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, CLAY PACKER ETC.)

PUMPING TEST

PUMPING TEST METHOD: ☒ PUMP ☐ BAILER

PUMPING RATE: From 11 to 10

DURATION OF PUMPING: 2 HOURS 30 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 10 MINUTES	20 MINUTES	45 MINUTES	60 MINUTES
4.10 FEET	25.30 FEET	24.82 FEET	26.46 FEET	28.90 FEET	25.64 FEET

☒ PUMPING ☐ RECOVERY

IF FLOWING GIVE RATE: GPM

PUMP SETTING AT: 39.70 FEET

WATER AT END OF TEST: ☐ CLEAR ☐ CLOUDY

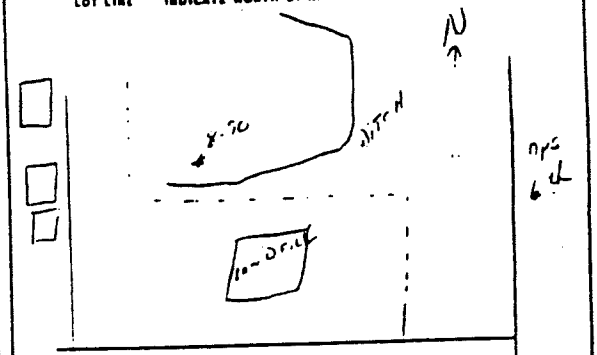
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☐ DEEP

RECOMMENDED PUMP SETTING: FEET

RECOMMENDED PUMPING RATE: GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW



nps 6 dl

*Packer test on 4" hole then reamed to 6 1/4".
* Steel is hole at 60 ft.
drillers remarks may be a old probe.

Pg. 1 of 36

117089

FINAL STATUS OF WELL	☐ WATER SUPPLY ☐ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL	☐ ABANDONED INSUFFICIENT SUPPLY ☐ ABANDONED POOR QUALITY ☐ UNFINISHED ☐ DEWATERING
WATER USE	☐ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL	☐ COMMERCIAL ☐ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☐ NOT USED ☒ OTHER
METHOD OF CONSTRUCTION	☐ CABLE TOOL ☐ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☐ ROTARY (AIR) ☐ AIR PERCUSSION	☐ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: G. Hart & Sons Well Drilling Ltd.

WELL CONTRACTOR'S LICENCE NUMBER: 2662

ADDRESS: Box 850, R.R.#1, Fenelon Falls, Ontario

NAME OF WELL TECHNICIAN: Charlie Duggan

WELL TECHNICIAN'S LICENCE NUMBER:

SIGNATURE OF TECHNICIAN/CONTRACTOR:

SUBMISSION DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

Borehole 8-90
(continued)

FORM NO. 0506 (11/88) FORM 8

OWNER'S COPY

of the Environment
Ontario

WATER WELL RECORD

1 PRINT ONLY IN SPACES PROVIDED
2 CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT	TOWNSHIP BOROUGH CITY TOWN VILLAGE	CON BLOCK TRACT SURVEY ETC	LOT
Victoria	Ops Twp. (Hole#2)	Con. 6	26

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
Town of Lindsay	Lindsay, Ontario	DAY 12 MO July YR 90

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FEET FROM	DEPTH FEET TO
Brown	Clay	Silt, Stones, Boulders	loose	0	18
Gray	Clay	Silt, fine gravel, stones	loose	18	22
Gray	Limestone	Clay	soft	22	29
Gray	Limestone		hard	29	32

WATER RECORD

WATER FOUND AT FEET	KIND OF WATER
27	☒ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS

CASING & OPEN HOLE RECORD

INSIDE DIAM. OF WELL	MATERIAL	WALL THICKNESS (UNLESS OPEN HOLE)	DEPTH FEET FROM	DEPTH FEET TO
6½	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC	.188	+ 1	23
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			

SCREEN

SIZE OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

PLUGGING & SEALING RECORD

DEPTH SET AT FEET FROM	DEPTH SET AT FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER ETC.)
0	20	Benseal & Mud Slurry

PUMPING TEST

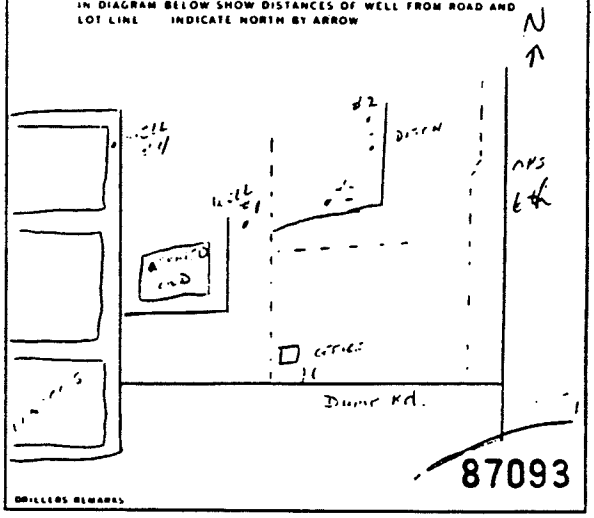
PUMPING TEST METHOD: ☒ PUMP ☐ BAILER
PUMPING RATE: 1 GPM
DURATION OF PUMPING: 2 HOURS 30 MINUTES

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☒ PUMPING ☐ RECOVERY: 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
3.35 FEET	12.94 FEET	7.24 FEET	9.80 FEET	10.18 FEET	10.94 FEET

IF FLOWING GIVE RATE: GPM
PUMP INTAKE SET AT: 30 FEET
WATER AT END OF TEST: ☒ CLEAR ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☐ DEEP
RECOMMENDED PUMP SETTING: 30 FEET
RECOMMENDED PUMPING RATE: GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW



DRILLERS REMARKS

FINAL STATUS OF WELL	☐ WATER SUPPLY ☐ ABANDONED INSUFFICIENT SUPPLY ☒ OBSERVATION WELL ☐ ABANDONED POOR QUALITY ☐ TEST HOLE ☐ UNFINISHED ☐ RECHARGE WELL ☐ DEWATERING
WATER USE	☐ DOMESTIC ☐ COMMERCIAL ☐ STOCK ☒ MUNICIPAL ☐ IRRIGATION ☐ PUBLIC SUPPLY ☐ INDUSTRIAL ☐ COOLING OR AIR CONDITIONING ☐ OTHER ☐ NOT USED
METHOD OF CONSTRUCTION	☒ CABLE TOOL ☐ BORING ☐ ROTARY (CONVENTIONAL) ☐ DIAMOND ☐ ROTARY (REVERSE) ☐ JETTING ☐ ROTARY (AIR) ☐ DRIVING ☐ AIR PERCUSSION ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: G. Hart & Sons Well Drilling Ltd.
WELL CONTRACTOR'S LICENCE NUMBER: 2662
ADDRESS: Box 850, R.R.#1, Fenelon Falls, Ontario
NAME OF WELL TECHNICIAN: Greg Bullock
WELL TECHNICIAN'S LICENCE NUMBER:
SIGNATURE OF TECHNICIAN/CONTRACTOR:
SUBMISSION DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

Borehole 9-90

OWNER'S COPY

FORM NO 0506 (11-86) FORM 8

JAGGER HIMS LIMITED
CONSULTING ENGINEERS

BOREHOLE NO. 12-91

PROJECT NAME LINDSAY LANDFILL SITE — **PROJECT NO.** 90179.01

CLIENT HYDROTERRA LIMITED — **DATE** MAY 21 to 22, 1991

BOREHOLE TYPE 108 mm I.D. HOLLOW STEM AUGERS — **FIELD SUPERVISOR** FMB

GROUND ELEVATION 262.42 m a.s.l. — **ENGINEER** AGH

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	'N' VALUE	% WATER	% RECOVERY	ROD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % (W_P, W_L)	REMARKS
±0.3	DARK BROWN SILTY TOPSOIL		I II III								Monitor II is stalled in a arate borehol a gas monitor
	SILTY SAND TILL Mottled dark yellowish brown and grey, silty sand with some fine gravel and roots to ±0.6 m. Becoming silty sand till with some gravel and trace to some clay, rusty stains, roots at top. W.T.P.L. matrix from ±1.5 to ± 2.7 m. Loose, becoming compact at ±0.8 m, changing to dense below ±2.3 m.			SS1	10	18					Bridging of s cause difficu in the instal of Monitor I.
				SS2	16	11					
				SS3	21	10					
±3.0				SS4	44	8			44		
	SILTY GRAVELLY SAND TILL Yellowish brown, silty gravelly sand till, trace clay, rusty stains, boulder at ±3.1 m. Saturated. Very dense.										- bouldery dr
±3.7				SS5	77	7			77		- bouldery dr
	SILTY SAND TILL TO SILT TILL TO GRAVELLY SAND TILL Light yellowish brown, becoming grey at ±4.6 m, silty sand till to silt till with trace of clay and gravel, rusty stains to ±4.3 m. Becomes gravelly sand till with some silt and trace of clay at ±5.0 m, silty sand till with some gravel fragments and trace of clay at bottom. ±12 cm thick lense of fine to medium sand, trace silt and gravel fragments at ±5.8 m.			SS6	65 for 152 mm	11			65/152 mm		
				SS7	75 for 51 mm	10			75/51 mm		- bouldery dr
				SS8	56 for 152 mm	6			56/152 mm		SS8 Grain Siz Gravel 34% Sand 37% Silt 20% Clay 9%
±6.2				SS9	80 for 152 mm	9			80/152 mm		
	Wet to moist at ±5.3 m, changin to saturated at ±6.1 m. Very dense.			SS10	50 for 76 mm	11			50/76 mm		
	Borehole terminated at ±6.2 m at auger refusal on assumed bedrock.										

JAGGER HIMS LIMITED
CONSULTING ENGINEERS

BOREHOLE NO. 1391

PROJECT NAME LINDSAY LANDFILL SITE — **PROJECT NO.** 90179.01

CLIENT HYDROTERRA LIMITED — **DATE** MAY 22 to 23, 1991

BOREHOLE TYPE 108 mm I.D. HOLLOW STEM AUGERS — **FIELD SUPERVISOR** J

GROUND ELEVATION 261.27 m a.s.l. — **ENGINEER** AGH

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % (W P – W L)	REMARKS
±0.4	BLACK TO BROWN SILTY TOPSOIL		I III II								
	SILTY SAND TILL Dark mottled yellowish brown, silty sand till, some gravel, trace clay. Moist to wet. Compact.			SS1	16	18					Monitor II is installed in a separate borehole.
±1.5				SS2	13	12					- bouldery drill.
	SILTY SAND TILL TO SILTY GRAVELLY SAND TILL Yellowish brown, becoming grey at ±4.6 m, silty gravelly sand till to ±2.2 m. Becoming silty sand till, trace clay, variable gravel content, rusty stains, changing to silty gravelly sand till at ±3.6 m. Becomes silty sand			SS3	60	6			60		Monitor I has a gas monitor installed.
				SS4	66	8			66		
				SS5	80 for 152 mm	11			80/152 mm		- bouldery drill.
				SS6	50 for 76 mm	6			50/76 mm		
±5.3	till with fine sand lense ±2.5 cm thick at bottom, boulder at ±5.2 m. Wet becoming saturated at ±3.1 m. Very dense			SS7	94	9			94		SS7 Grain Size Gravel 47% Sand 33% Silt 20%
				SS8	75 for 152 mm	11			75/152 mm		
	SANDY SILT TILL TO SILTY SAND TILL Grey, fine sandy silt till, some gravel trace clay, becoming silty fine sand till some gravel with a sand lense ±1 cm thick at ±6.6 m, trace to some gravel and trace clay at ±7.6 m, trace gravel and clay at ±8.4 m. Becoming silty sand till, some gravel, trace clay at ±8.9 m, silty sand to sandy silt till, trace gravel and clay at bottom, fine to medium			SS9	60 for 152 mm	10			60/152 mm		
				SS10	85 for 152 mm	8			85/152 mm		-difficult drill.
				SS11	60 for 25 mm	18			60/25 mm		
				SS12	50 for 76 mm	15			50/76 mm		
				SS13	100 for 102 mm	7			100/102 mm		
				SS14	100 for 76 mm	11			100/76 mm		
±11.2	sand lense with black specks, trace silt becoming siltier with depth from ±8.5 to ±8.9 m. Moist to wet, becoming saturated at ±8.4 m. Very dense.			SS15	50 for 25 mm	9			50/25 mm		
±12.0				SS16	50 for 51 mm	10			50/51 mm		-difficult drill.
	GRAVELLY SAND TILL Grey gravelly sand till. Very dense.										
	Borehole terminated at ±12.0 m at auger refusal on assumed bedrock.										

JAGGER HIMS LIMITED
CONSULTING ENGINEERS

BOREHOLE NO. 14-91

PROJECT NAME: LINDSAY LANDFILL SITE
PROJECT NO.: 90179.01
CLIENT: HYDROTERRA LIMITED
DATE: MAY 23 to 24, 1991
BOREHOLE TYPE: 108 mm I.D. HOLLOW STEM AUGERS
FIELD SUPERVISOR: FMB
GROUND ELEVATION: 258.56 m a.s.l.
ENGINEER: AGH

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	'N' VALUE	% WATER	% RECOVERY	RQD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT %	REMARKS
	FILL: Yellowish brown silty fine sand to fine sand, some silt, trace clay, gravel and roots. Moist. Very dense.		I II	SS1	55 for 152 mm	6		55	55/152 mm	W P W L	Monitor I has gas monitor led.
±0.6	DARK MOTTLED BROWN CLAYEY SILT TOPSOIL										Heaving sands difficulties the installat Monitors I an
±1.1	SILTY SAND TILL TO SAND TILL Mottled yellowish brown and grey, fine sandy silt, with grey silt lenses <1 mm thick to ±1.4m. Becoming silty fine sand till to fine sand till with some silt and gravel, occasional rusty stains. Moist becoming wet at ±2.3 m. Dense to very dense.			SS2	41	8			41		
				SS3	50 for 51 mm	9		50	50/51 mm		- boundery dr
				SS4	14	10					- bouldery dr
				SS5	50 for 76 mm	7		50	50/76 mm		
±3.7	MEDIUM TO COARSE SAND: Brown medium to coarse sand, becoming finer with depth. Saturated.										
±4.1	SANDY SILT TILL TO SILT TILL Grey sandy silt till to silt till, trace to some sand and gravel. Becomes silt till with trace to some sand and some gravel at ±4.5 m, occasional fine sand lenses at ±1 cm thick. Wet. Very dense.			SS6	60 for 152 mm	6		60	60/152 mm		
				SS7	75 for 152 mm	11		75	75/152 mm		
±5.0	SILTY SAND TILL TO SAND TILL Grey silty sand till with some clay and gravel, occasional fine sand lenses ±1 cm thick to ±6.6 m. Becoming silty sand to sandy silt till with some gravel, changing to silty sand till with some gravel to gravelly at ±7.3m. Becomes sand till with some silt and gravel at ±8.1 m, silty fine sand and gravel fragments at bottom. Moist becoming saturated at ±9.1 m. Very dense.			SS8	70 for 152 mm	7		70	70/152 mm		SS8 Grain Siz Gravel 19 Sand 37 Silt 32 Clay 12
				SS9	75 for 152 mm	8		75	75/152 mm		-bouldery dri for remainde hole.
				SS10	75 for 152 mm	7		75	75/152 mm		
				SS11	95 for 152 mm	7		95	95/152 mm		
				SS12	60 for 152 mm	5		60	60/152 mm		
±9.1	Borehole terminated at ±9.1 m at auger refusal on assumed bedrock.			SS13	50 for 25 mm	16		50	50/25 mm		

DRILL HOLE # reinstall 14-91 (2008)

Date Drilled: Dec. 10, 2007
Rig: CME 55N
Contractor: Aardvark Drilling Inc.
Hammer Type: cathead

Location: Lindsay/Ops Landfill
Elevation:
Co-ord: 683575 E, 4806619 N

Project No. 07-0384-00
Project: Kawartha Lakes
Client: City fo Kawartha Lakes

Depth (m)	Sample Type	Recovery Number	Blows/0.15 m	Symbols	SOIL DESCRIPTION	Well Installation	Moisture Content % Wp |-----X-----| Wl 10 30 50 70 90	Pocket Penetrometer ● kPa ● 100 200 300 400 / SPT (N) ■ Blows/ft ■ 10 20 30 40
0					Ground Surface 0			
					TOPSOIL 0			
					FILL sandy silt, some gravel trace clay, cobbles	Concrete; Bentonite; Raised Steel Casing, padlocked		
1								
2						#2 Silca Sand		
3								
4					-13			
					SILT 13 grey, trace sand some sand seams			
						2" Slot 10 Screen		
5								
6								

Note: This borehole log has been prepared for geotechnical purposes and does not necessarily contain information suitable for an environmental assessment of the subsurface conditions.

Aardvark Drilling Inc.
25-C Lewis Road
Guelph, Ontario

CONSULTING ENGINEERS

PROJECT NAME LINDSAY LANDFILL SITE — **PROJECT NO.** 90179.01

CLIENT HYDROTERRA LIMITED — **DATE** MAY 27, 1991

BOREHOLE TYPE 108 mm I.D. HOLLOW STEM AUGERS — **FIELD SUPERVISOR** FMB

GROUND ELEVATION 258.96 m a.s.l. — **ENGINEER** AGH

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS I	MONITOR DETAILS II	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % (W P — W L)	REMARKS
	DARK BROWN TO MOTTLED DARK BROWN SILTY TOPSOIL				SS1	75	9			75		Monitor II is stalled in a s arate borehole
±1.1												
	SILT TO SILT TILL: Mottled yellow-brown and grey, becoming layers of yellow brown at ±1.5 m, weathered silt trace clay, grey and rusty stains, becoming layers of blocky fractured silt at ±1.5 m. Changing to silt to silty sand till at bottom. Moist to wet. Dense to very dense.				SS2	45	16			45		-bouldery dri
±2.2					SS3	55	11			55		
					SS4	41	8			41		
					SS5	51	9			51		SS5 Grain Size: Gravel 1%, Sand 84%, Silt 9%, Clay 6%
					SS6	34	19					
±5.3					SS7	35	18					
	VARIABLE SAND AND SILT LAYERS: Dark yellowish brown fine sandy silt, occasional silt layers, gravel fragments, till-like. Becoming yellowish brown, silty fine sand occasional rounded gravel at ±2.8 m, becoming brown fine to medium sand at 3.0 m, becoming at ±3.5 m yellowish brown silty fine sand becoming siltier at depth, becoming brown fine to medium sand with <±4 cm thick lenses of silt, occasional gravel fragments, at ±3.7 m. Changing to yellowish brown fine sandy silt with silt lenses from <±5 mm to 10 mm thick at ±4.1 m, becoming at ±5.0 m grey silt trace sand, trace clay at depth. Wet becoming saturated at ±3.8 m. Dense to very dense, becoming dense at ±3.8 m.				SS8	34	15					
					SS9	74	10			74		
					SS10	35	9					SS10 Grain Si: Gravel 24%, Sand 40%, Silt 25%, Clay 11%
					SS11	50 for 76 mm	9			50/76 mm		
					SS12	75 for 152 mm	9			75/152 mm		
					SS13	75 for 152 mm	10			75/152 mm		
±10.7					SS14	50 for 76 mm	10			50/76 mm		
	SILT TILL TO SILTY SAND TILL: Grey silt till some clay, trace sand and fine gravel, ±10 cm thick lense at fine sandy silt, becoming fine sandy silt till to silty fine sand till trace clay at ±6.0 m. Changing to gravelly silty sand till with some clay at ±6.8 m. Becomes silty sand till with some gravel at ±8.2 m, gravel fragments at bottom, cobbles from ±6.1 m to ±6.9 m. Saturated. Dense to very dense.				SS15	100 for 76 mm	4			100/76 mm		-difficult dr:
	Borehole terminated at ±10.7 m at auger refusal on assumed bedrock.											

JAGGER HIMS LIMITED
CONSULTING ENGINEERS

BOREHOLE NO. 16-91

PROJECT NAME LINDSAY LANDFILL SITE — **PROJECT NO.** 90179.01

CLIENT HYDROTERRA LIMITED — **DATE** MAY 27 to 28, 1991

BOREHOLE TYPE 108 mm I.D. HOLLOW STEM AUGERS — **FIELD SUPERVISOR** FMB

GROUND ELEVATION 256.93 m a.s.l. — **ENGINEER** AGH

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS I	MONITOR DETAILS II	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION SPT 'N' VALUE 10 20 30 / SHEAR STRENGTH	WATER CONTENT % 10 20 30 (Wp, WL)	REMARKS
	FILL Mottled yellowish brown and grey, silty fine sand to fine sand with some silt with a trace to some gravel, trace roots and organic inclusions. Moist. Dense.				SS1	35	11					Monitor II is stalled in a se arate borehole
±1.1	SILTY SAND TILL TO SANDY SILT TILL: Grey to yellowish brown silty sand till, some gravel, rusty stains, becoming silty fine sand till to fine sandy silt till at ±1.5 m. Wet. Compact.				SS2	20	10					
±2.2	VARIABLE SAND AND SILT LAYERS AND TILL: Yellowish brown silt, becoming dark grey gravelly sand at ±2.4 m, becoming grey fine sand till trace to some silt with silt lenses <1 mm thick, at ±3.0 m. Becomes silt trace clay, with fine sand lense <2 mm thick at ±3.7 m. Moist to wet, becoming saturated at ±3.1 m. Very dense.				SS3	25	11					
					SS4	41	22			41		SS4 Grain Size Gravel 24% Sand 65% Silt 6% Clay 5%
±3.9					SS5	45	16			45		
	SANDY SILT TILL TO SILTY SAND TILL: Grey silt till trace to some sand, some gravel, trace clay, becoming sand till to silt till some gravel, trace clay, at ±4.5 m. Becomes a gravelly, silty sand till with some clay at ±5.3 m, changing to silty fine sand till with some gravel at ±6.6 m, gravelly fragments at bottom. Saturated. Compact becoming very dense below ±4.6 m.				SS6	16	10					
					SS7	66	9			66		-bouldery and difficult dri for remainder hole
					SS8	50 for 76 mm	6			50/76 mm		SS8 Grain Size Gravel 30% Sand 32% Silt 27% Clay 11%
					SS9	110 for 152 mm	4			110/152 mm		
					SS10	100 for 152 mm	8			100/152 mm		
±7.7					SS11	50 for 25 mm	11			50/25 mm		
	Borehole terminated at ±7.7 m at auger refusal on assumed bedrock.											

JAGGER HIMS LIMITED
CONSULTING ENGINEERS

BOREHOLE NO. 17-91

PROJECT NAME LINDSAY LANDFILL SITE
PROJECT NO. 90179.01
CLIENT HYDROTERRA LIMITED
DATE MAY 28 to 29, 1991
BOREHOLE TYPE 108 mm I.D. HOLLOW STEM AUGERS
FIELD SUPERVISOR MB
GROUND ELEVATION 259.11 m a.s.l.
ENGINEER AGH

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT %	REMARKS
±0.1	DARK BROWN SILTY TOPSOIL		I II I II							W P W L	Monitor II is stalled in a s arate borehole
	SILTY SAND TILL Dark yellowish brown to mottled yellowish brown, becoming yellowish brown at ±1.5 m, becoming grey at ±4.0 m, silty sand till with some gravel, trace clay, becoming variable gravel at ±3.1 m. Rusty stains from ±0.1 to ±3.8 m. Moist becoming moist to wet at ±1.5 m, changing to wet at ±2.3 m, becoming saturated at ±4.6 m. Compact to dense, changing to compact at ±2.3 m, becoming very dense below ±3.8 m.			SS1	18	7					I M silica sand used as t fill.
				SS2	33	4					Monitor I has a monitor instal
				SS3	16	9					-bouldery dril
				SS4	27	10					
				SS5	26	11					-boulder, dril
				SS6	67	12			67		
±4.9											-bouldery dril
	VARIABLE SILTY SAND AND SAND LAYERS: Yellowish brown stratified silty fine sands with silt lenses <±2 mm thick, becoming brown laminated fine sand with some silt at ±5.3 m. Becomes silty fine sands to fine sandy silt with grey silt lense ±2 cm thick at ±5.5 m, stratified silt at bottom. Saturated. Very dense.			SS7	79	14			79		
±5.8				SS8	75 for 152 mm	13		75/152 mm			-bouldery dril SS8 Grain Size Sand 85% Silt 11% Clay 4%
				SS9	60 for 152 mm	7		60/152 mm			-difficult dri for remainder hole.
	SILTY SAND TILL TO SAND TILL Grey silt fine sand till with some gravel, becoming sand till trace to some silt, some gravel at ±7.6 m. Becomes gravelly sand till trace to some silt below ±8.2 m. Moist to wet, becoming wet to saturated at ±8.4 m, changing to moist below ±9.1 m. Very dense.			SS10	75 for 102 mm	6		75/102 mm			
				SS11	50 for 76 mm	7		50/76 mm			
				SS12	65 for 152 mm	8		65/152 mm			
				SS13	75 for 102 mm	5		75/102 mm			
±9.7	Borehole terminated at ±9.7 m at auger refusal on assumed bedrock										

JAGGER HIMS LIMITED
CONSULTING ENGINEERS

BOREHOLE NO. 18-91

PROJECT NAME: LINDSAY LANDFILL SITE
PROJECT NO. 90179.01
CLIENT: HYDROTERRA LIMITED
DATE: MAY 29, 1991
BOREHOLE TYPE: 108 mm I.D. HOLLOW STEM AUGERS
FIELD SUPERVISOR: FMF
GROUND ELEVATION: 258.67 m a.s.l.
ENGINEER: AGH

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE ROD (%)	CONE PENETRATION SPT 'N' VALUE 10 20 30 / SHEAR STRENGTH	WATER CONTENT % 5 10 15 W_P W_L	REMARKS
	DARK BROWN SILTY TOPSOIL										Mixture of 1 : silt sand and hole were added to borehole as bac material.
±0.5	SILTY SAND TILL Yellowish brown silty sand till with some gravel, trace clay, rusty stains. Moist to wet. Compact.			SS1	70	9			70		
				SS2	22	10					
±3.1	VARIABLE SAND AND SILT LAYERS Yellowish brown layers of clayey silt with some gravel and sand, fine sand lenses <±1 cm thick. Bouldery drilling from ±3.1 m to ±3.7 m. Moist to wet. Dense.			SS3	31	10					-bouldery dril
±3.7	SANDY SILT TILL TO SILTY SAND TILL: Yellowish brown, mottled yellowish brown and grey, becoming grey at ±6.1 m, fine sandy silt till with some gravel, trace clay. Becomes silty sand till with some gravel at ±5.5 m, rusty stains at top, boulder at ±4.4 m. Wet. Very dense to compact.			SS4	75/ 7 for 127 mm				75/127 mm		-bouldery dril -bouldery dril
±6.7	Borehole terminated at ±6.7 m in silty sand till.			SS5	25	9					

SS3 Grain Siz
Gravel 12%
Sand 17%
Silt 50%
Clay 21%

JAGGER HIMS LIMITED
CONSULTING ENGINEERS

BOREHOLE NO. 19-91

PROJECT NAME: LINDSAY LANDFILL SITE
PROJECT NO.: 90179.01
CLIENT: HYDROTERRA LIMITED
DATE: MAY 29, 1991
BOREHOLE TYPE: 108 mm I.D. HOLLOW STEM AUGERS
FIELD SUPERVISOR: FM
GROUND ELEVATION: 257.53 m a.s.l.
ENGINEER: AGH

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	'N' VALUE	% WATER	% RECOVERY	RQD (%)	CONE PENETRATION SPT 'N' VALUE 10 20 30 / SHEAR STRENGTH	WATER CONTENT % 10 20 30 (W P, W L)	REMARKS
±0.2	DARK BROWN SILTY TOPSOIL										
	SILT TO CLAYEY SILT Dark brown becoming mottled light and dark brown at ±0.8 m, silt, trace to some sand, trace clay, some roots to trace roots with depth. Becoming clayey silt at ±0.6 m. Wet. Compact.			SS1	15	23					Mixture of 1H silica sand and holeplug were added to borehole as back-fill material.
±1.1				SS8	20	6					
±1.5	SANDY SILT TILL: Dark yellowish brown, sandy silt till, some gravel, trace clay, rusty stains. Moist. Compact.			SS2	18	21					
	VARIABLE SAND AND SILT LAYERS Dark brown fine to medium sand, trace gravel and silt, Yellowish brown layers of silty fine sand to fine sandy silt, trace gravel, <1 cm thick silt lenses, at ±2.2 m. Becoming fine sand trace to some silt, changing to fine sandy silt, light brown silt lenses <2 cm thick, at ±3.0 m. Becoming clayey silt with some sand and trace of gravel black specks, at ±3.6 m. Becoming grey at ±3.8 m, layers of silty fine sand to fine sandy silt to silt, trace clay and gravel at ±4.5 m. Saturated. Compact to dense.			SS3	33	19					
				SS4	38	19					
				SS5	16	22					SS5 Grain Size Gravel 2% Sand 12% Silt 65% Clay 21%
±5.2				SS6	23	8					SS6 Grain Size Gravel 41% Sand 47% Silt 12%
±6.1	FINE TO COARSE SAND Grey fine to coarse sand, occasional silt seam. Becomes gravel and sand with some silt at ±5.6 m. Saturated. Very dense.			SS7	60	12			60		
	Borehole terminated at ±6.1 m in gravel and sand.										

Ontario Environment

WATER WELL RECORD

1 PRINT ONLY IN SPACES PROVIDED
2 CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT	TOWNSHIP BOROUGH CITY TOWN VILLAGE	CON BLOCK TRACT SURVEY ETC	LOT
Victoria	Ops	con. 6	26

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
Town of Lindsay	Lindsay, Ontario	DAY 31 MO 05 YR 91

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Topsoil			0	½
Grey	Gravel	small boulder		½	4
Brown	Clay	Gravel	soft	4	16
Brown	Sand		dry	16	17
Grey	Clay	Gravel		17	20
Grey	Gravel		dry	20	22
Grey	Clay	Gravel		22	35
Grey	Limestone			35	43

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
38	☒ FRESH ☐ SULPHUR ☐ MINERALS ☐ GAS ☐ SALTY
	☐ FRESH ☐ SULPHUR ☐ MINERALS ☐ GAS ☐ SALTY
	☐ FRESH ☐ SULPHUR ☐ MINERALS ☐ GAS ☐ SALTY
	☐ FRESH ☐ SULPHUR ☐ MINERALS ☐ GAS ☐ SALTY
	☐ FRESH ☐ SULPHUR ☐ MINERALS ☐ GAS ☐ SALTY

CASING & OPEN HOLE RECORD

INSIDE DIAM. OF HOLES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6½	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC	.188	+ 3	35
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			-

SCREEN

SIZE OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH SET AT FEET	

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, CLAY PACKER ETC.)
0	12	Bentonite & Mud slurry

PUMPING TEST

PUMPING TEST METHOD: ☒ PUMP ☐ BAILER
PUMPING RATE: 4 GPM
DURATION OF PUMPING: 3 HOURS 30 MINUTES
☒ PUMPING ☐ RECOVERY

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 10 MINUTES	20 MINUTES	30 MINUTES	40 MINUTES
16.40 FEET	21.00	19.60	19.98	20.58	20.68

If flowing give rate: GPM
Pump intake set at: 40 FEET
Water at end of test: ☐ CLEAR ☐ CLOUDY
Recommended pump type: ☐ SHALLOW ☒ DEEP
Recommended pump setting: FEET
Recommended pumping rate: GPM

FINAL STATUS OF WELL

☐ WATER SUPPLY ☐ ABANDONED, INSUFFICIENT SUPPLY
☒ OBSERVATION WELL ☐ ABANDONED, POOR QUALITY
☐ TEST HOLE ☐ UNFINISHED
☐ RECHARGE WELL ☐ DEWATERING

WATER USE

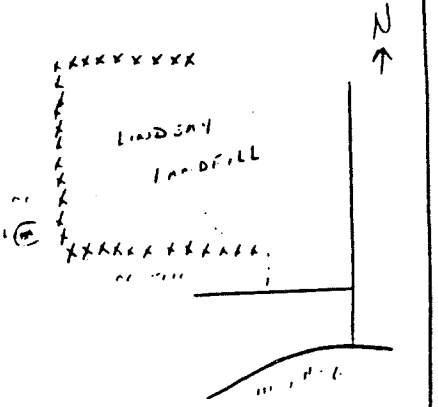
☐ DOMESTIC ☐ COMMERCIAL
☐ STOCK ☐ MUNICIPAL
☐ IRRIGATION ☐ PUBLIC SUPPLY
☐ INDUSTRIAL ☒ COOLING OR AIR CONDITIONING
☒ OTHER ☐ NOT USED

METHOD OF CONSTRUCTION

☒ CABLE TOOL ☐ BORING
☐ ROTARY (CONVENTIONAL) ☐ DIAMOND
☐ ROTARY (REVERSE) ☐ JETTING
☐ ROTARY (AIR) ☐ DRIVING
☐ AIR PERCUSSION ☐ DIGGING ☐ OTHER

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW



DRILLERS REMARKS

103432

CONTRACTOR

NAME OF WELL CONTRACTOR: G. Hart & Sons Well Drilling Ltd.
WELL CONTRACTOR'S LICENCE NUMBER: 2662
ADDRESS: Box 850, R.R.#1, Fenelon Falls, Ontario
NAME OF WELL TECHNICIAN: Dave MacDonald
WELL TECHNICIAN'S LICENCE NUMBER:
SIGNATURE OF TECHNICIAN/CONTRACTOR:
SUBMISSION DATE: DAY MO YR

OFFICE USE ONLY

Borehole 20-91

OWNER'S COPY

FORM NO. 0506 (11/86) FORM 9

Ontario Environment

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE (20-91)	CON, BLOCK, TRACT, SURVEY, ETC	LOT
Victoria	Ops Twp., Lindsay Landfill	Con. 6	26
GIVEN (OR NEAREST) POINT	**ADDRESS**	**DATE COMPLETED**
Town of Lindsay	Lindsay, Ontario	DAY 15 MO 02 YR 93

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
		* Previously drilled to 43 ft. (see record#103432)			
Gray	Limestone			43	65

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
44	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
61	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
63	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS

CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
4	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC		43	65
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			

SCREEN

KIND & GAUGE OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	**DEPTH TO TOP OF SCREEN FEET**	

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, CLAY PACKER, ETC.)

PUMPING TEST

PUMPING TEST METHOD: ☒ PUMP ☐ BAILER

PUMPING RATE: 4 GPM

DURATION OF PUMPING: 2 HOURS 30 MINS

STATIC LEVEL: 16 FEET

WATER LEVEL END OF PUMPING: 17.18 FEET

WATER LEVELS DURING: ☒ PUMPING ☐ RECOVERY

10 MINUTES	20 MINUTES	45 MINUTES	60 MINUTES
17.06 FEET	17.14 FEET	17.14 FEET	17.18 FEET

IF FLOWING GIVE RATE: GPM

PUMP INTAKE SET AT: 41.50 FEET

WATER AT END OF TEST: ☐ CLEAR ☐ CLOUDY

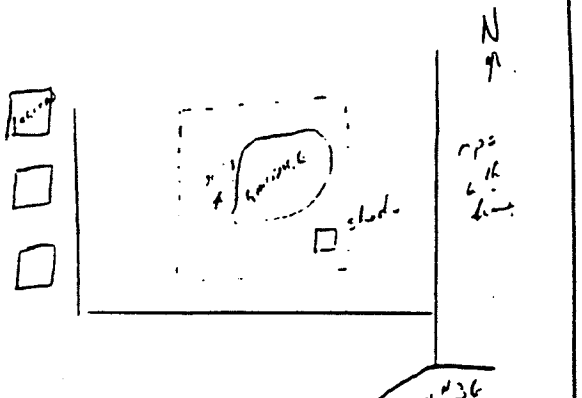
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☐ DEEP

RECOMMENDED PUMP SETTING: FEET

RECOMMENDED PUMPING RATE: GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



FINAL STATUS OF WELL	☐ WATER SUPPLY ☐ ABANDONED, INSUFFICIENT SUPPLY ☒ OBSERVATION WELL ☐ ABANDONED, POOR QUALITY ☐ TEST HOLE ☐ UNFINISHED ☐ RECHARGE WELL ☐ DEWATERING
WATER USE	☐ DOMESTIC ☐ COMMERCIAL ☐ STOCK ☐ MUNICIPAL ☐ IRRIGATION ☐ PUBLIC SUPPLY ☐ INDUSTRIAL ☐ COOLING OR AIR CONDITIONING ☐ OTHER ☐ NOT USED
METHOD OF CONSTRUCTION	☐ CABLE TOOL ☐ BORING ☐ ROTARY (CONVENTIONAL) ☐ DIAMOND ☐ ROTARY (REVERSE) ☐ JETTING ☒ ROTARY (AIR) ☐ DRIVING ☐ AIR PERCUSSION ☐ DIGGING ☐ OTHER

* Packer test on 4" hole then reamed to 6½".

117086

CONTRACTOR

NAME OF WELL CONTRACTOR: C. Hart & Sons Well Drilling Ltd.

WELL CONTRACTOR'S LICENCE NUMBER: 2662

ADDRESS: Box 850, R.R. #1, Fenelon Falls, Ontario

NAME OF WELL TECHNICIAN: Charlie Duggan

WELL TECHNICIAN'S LICENCE NUMBER:

SIGNATURE OF TECHNICIAN/CONTRACTOR:

SUBMITTED DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

Borehole 20-91
(continued)

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FORM NO. 0506 (11/88) FORM 8

Ontario Environment

WATER WELL RECORD

1 PRINT ONLY IN SPACES PROVIDED
2 CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON BLOCK, TRACT, SURVEY, ETC	LOT
Victoria	Ops	con. 6	26

CONTRACTOR (SUBMITTING RECORD)	ADDRESS	DATE COMPLETED
Town of Lindsay	Lindsay, Ontario	DAY 03 MO 06 YR 91

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Clay	Gravel	soft	0	6
Grey	Clay		soft	6	24
Grey	Clay	Gravel	hard	24	32½
Grey	Limestone			32½	42

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
37	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
39	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS

CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6½	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC	.188	+ 3	32½
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			

SCREEN

SLOT NO. OF OPENING (SIZE NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH SET AT FEET FROM	TO

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
0	12	Benseal & Mud Slurry

PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
☒ PUMP ☐ BAILER	10 GPM	3 HOURS ___ MINS

STATIC LEVEL	PUMPING LEVEL END OF PUMPING	WATER LEVELS DURING ☒ PUMPING ☐ RECOVERY			
		10 MINUTES	20 MINUTES	30 MINUTES	40 MINUTES
9.74 FEET	16.28 FEET	14.16 FEET	15.05 FEET	15.34 FEET	15.70 FEET

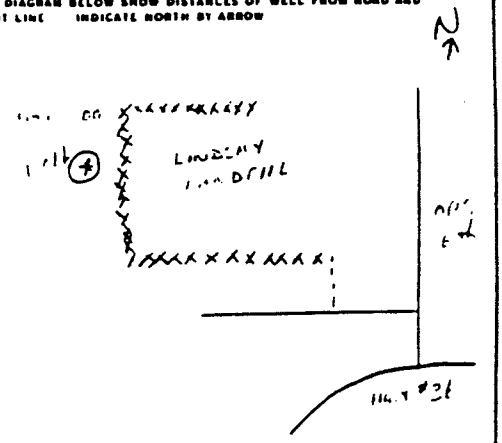
IF FLOWING GIVE RATE	PUMP SETTING SET AT	WATER AT END OF TEST
GPM	40 FEET	☐ CLEAR ☒ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☐ DEEP	FEET	GPM

FINAL STATUS OF WELL	☐ WATER SUPPLY ☒ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL ☐ ABANDONED, INSUFFICIENT SUPPLY ☐ ABANDONED, POOR QUALITY ☐ UNFINISHED ☐ DEWATERING
WATER USE	☐ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☐ COMMERCIAL ☐ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☒ OTHER Test Hole ☐ NOT USED
METHOD OF CONSTRUCTION	☒ CABLE TOOL ☐ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☐ ROTARY (AIR) ☐ AIR PERCUSSION ☐ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING ☐ DIGGING ☐ OTHER

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS

103431

CONTRACTOR

NAME OF WELL CONTRACTOR	WELL CONTRACTOR'S LICENCE NUMBER
G. Hart & Sons Well Drilling Ltd.	2662
ADDRESS: Box 850, R.R.#1, Fenelon Falls, Ontario	
NAME OF WELL TECHNICIAN: Dave MacDonald	WELL TECHNICIAN'S LICENCE NUMBER
SIGNATURE OF TECHNICIAN/CONTRACTOR	SUBMISSION DATE: DAY ___ MO ___ YR ___

OFFICE USE ONLY

Borehole 21-91

OWNER'S COPY

FORM NO. 0506 (11/88) FORM 9

Ontario Ministry of the Environment

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON, BLOCK, TRACT, SURVEY, ETC.	LOT
Victoria	Ops Twp., Lindsay Landfill (21-91)	Con. 6	26

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
Town of Lindsay	Lindsay, Ontario	DAY 15 MO 02 YR 93

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
		*Previously drilled to 42 ft.			
		See record #103431			
Gray	Limestone			42	65

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
61	☐ FRESH ☒ SULPHUR ☐ MINERALS ☐ GAS; ☐ SALTY

CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
4	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE ☐ PLASTIC		40	65

SCREEN

MANUFACTURER'S SCREEN CODE	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE: | DEPTH TO TOP OF SCREEN FEET:

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

PUMPING TEST

PUMPING TEST METHOD: ☒ PUMP ☐ BAILER | PUMPING RATE: 10 GPM | DURATION OF PUMPING: 2 HOURS 30 MINUTES

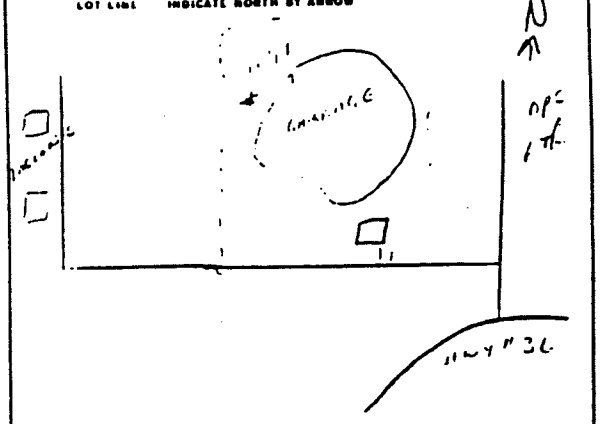
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: ☒ PUMPING ☐ RECOVERY			
		10 MINUTES	20 MINUTES	45 MINUTES	60 MINUTES
10 FEET	12.88 FEET	12.04 FEET	12.38 FEET	12.38 FEET	12.88 FEET

IF FLOWING GIVE RATE: GPM | PUMP INTAKE SET AT: 39.70 FEET | WATER AT END OF TEST: ☒ CLEAR ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☐ DEEP | RECOMMENDED PUMP SETTING: FEET | RECOMMENDED PUMPING RATE: GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



FINAL STATUS OF WELL	☐ WATER SUPPLY ☐ ABANDONED, INSUFFICIENT SUPPLY ☒ OBSERVATION WELL ☐ ABANDONED, POOR QUALITY ☐ TEST HOLE ☐ UNFINISHED ☐ RECHARGE WELL ☐ DEWATERING
WATER USE	☐ DOMESTIC ☐ COMMERCIAL ☐ STOCK ☐ MUNICIPAL ☐ IRRIGATION ☐ PUBLIC SUPPLY ☐ INDUSTRIAL ☐ COOLING OR AIR CONDITIONING ☒ OTHER Monitoring ☐ NOT USED
METHOD OF CONSTRUCTION	☐ CABLE TOOL ☐ BORING ☐ ROTARY (CONVENTIONAL) ☐ DIAMOND ☐ ROTARY (REVERSE) ☐ JETTING ☒ ROTARY (AIR) ☐ DRIVING ☐ AIR PERCUSSION ☐ DIGGING ☐ OTHER

* Packer Test on 4" hole then reamed to 6".

DRILLER'S REMARKS: 117085

CONTRACTOR

NAME OF WELL CONTRACTOR	WELL CONTRACTOR'S LICENCE NUMBER
C. Hart & Sons Well Drilling Ltd.	2662

ADDRESS: Box 850, R.R. #1, Fenelon Falls, Ontario

NAME OF WELL TECHNICIAN	WELL TECHNICIAN'S LICENCE NUMBER
Charlie Durnam	

SIGNATURE OF TECHNICIAN/CONTRACTOR | SUBMISSION DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

Borehole 21-91 (continued)

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FORM NO. 0506 (11/88) FORM 9

Ontario Environment

1 PRINT ONLY IN SPACES PROVIDED
2 CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT	TOWNSHIP BOROUGH CITY TOWN VILLAGE	CON BLOCK TRACT SURVEY ETC	LOT
Victoria	Ops	con. 6	26
BORING (BOREHOLE FIRST)	**ADDRESS**	**DATE COMPLETED**	
Town of Lindsay	Lindsay, Ontario	DAY 04 MO 06 YR 91	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FEET FROM	TO
Brown	Topsoil			0	2
Gray	Clay	Gravel		2	8
Gray	Boulder			8	16
Gray	Clay	Gravel		16	19
Brown	Shale		water bearing	19	23
Gray	Limestone			23	26

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER		
23	☒ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS	
	☐ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS	
	☐ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS	
	☐ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS	
	☐ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS	

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
6¼	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC	.188	+ 3	23
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.) | DIAMETER INCHES | LENGTH FEET

MATERIAL AND TYPE | DEPTH SET AT FEET

PLUGGING & SEALING RECORD

DEPTH SET AT FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER ETC.)
0	12	Benseal & Holeplug

PUMPING TEST

PUMPING TEST METHOD: ☒ PUMP ☐ BAILER

PUMPING RATE: 5 GPM | DURATION OF PUMPING: 3 HOURS

STATIC LEVEL: 3.20 FEET | PUMPED LEVEL END OF PUMPING: 14.60 FEET

WATER LEVELS DURING: ☒ PUMPING ☐ RECOVERY

10 MINUTES	20 MINUTES	30 MINUTES	40 MINUTES
11.10	12.46	12.48	12.66

IF FLOWING, GIVE RATE: GPM

PUMP INTAKE SET AT: 24 FEET

WATER AT END OF TEST: ☒ CLEAR ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☒ SHALLOW ☐ DEEP

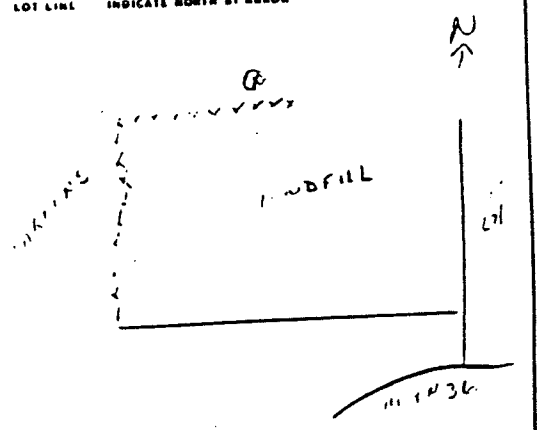
RECOMMENDED PUMP SETTING: FEET

RECOMMENDED PUMPING RATE: GPM

FINAL STATUS OF WELL	☐ WATER SUPPLY ☒ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL	☐ ABANDONED INSUFFICIENT SUPPLY ☐ ABANDONED POOR QUALITY ☐ UNFINISHED ☐ DEWATERING
WATER USE	☐ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☒ OTHER Test	☐ COMMERCIAL ☐ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☐ NOT USED
METHOD OF CONSTRUCTION	☒ CABLE TOOL ☐ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☐ ROTARY (AIR) ☐ AIR PERCUSSION	☐ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING ☐ DIGGING ☐ OTHER

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW



DRILLERS REMARKS

103430

CONTRACTOR

NAME OF WELL CONTRACTOR: G. Hart & Sons Well Drilling Ltd. | WELL CONTRACTOR'S LICENCE NUMBER: 2662

ADDRESS: Box 850, R.R.#1, Fenelon Falls, Ontario

NAME OF WELL TECHNICIAN: Dave MacDonald | WELL TECHNICIAN'S LICENCE NUMBER

SIGNATURE OF TECHNICIAN/CONTRACTOR | SUBMISSION DATE: DAY ____ MO ____ YR ____

OWNER'S COPY

OFFICE USE ONLY

Borehole 22-91

FORM NO 0506 (11/86) FORM 9

Ontario Ministry of the Environment

WATER WELL RECORD

1 PRINT ONLY IN SPACES PROVIDED
2 CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT	TOWNSHIP BOROUGH CITY TOWN VILLAGE	CON BLOCK TRACT SURVEY ETC	LOT
Victoria	Ops Twp., Lindsay Landfill (22-91)	Con. 6	26

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
Town of Lindsay	Lindsay, Ontario	DAY 18 MO 02 YR 93

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
		* Previously drilled 26 ft.	(see Record#103430)		
Gray	Limestone			26	60

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
27	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
4	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE ☐ PLASTIC		26	60
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			

SCREEN

SLOT NO. OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER ETC.)

PUMPING TEST

PUMPING TEST METHOD: ☒ PUMP ☐ BAILER
PUMPING RATE: 5 GPM
DURATION OF PUMPING: 2 HOURS 30 MINS
WATER LEVELS DURING: ☒ PUMPING ☐ RECOVERY

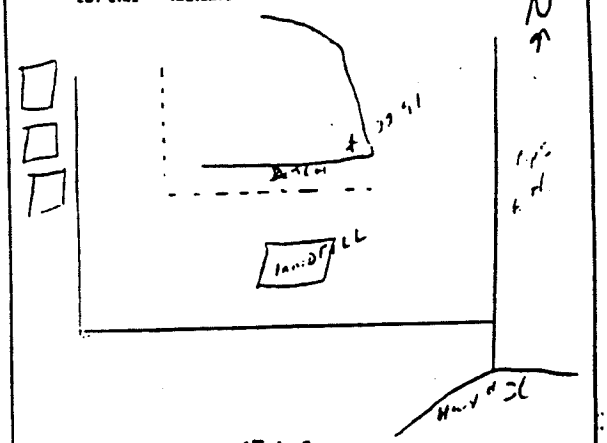
STATIC LEVEL	WATER LEVEL END OF PUMPING	10 MINUTES	20 MINUTES	45 MINUTES	60 MINUTES
3.70 FEET	10.04 FEET	8.84 FEET	9.20 FEET	9.44 FEET	9.68 FEET

IF FLOWING GIVE RATE: GPM
PUMP INTAKE SET AT: 25.40 FEET
WATER AT END OF TEST: ☐ CLEAR ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☐ DEEP
RECOMMENDED PUMP SETTING: FEET
RECOMMENDED PUMPING RATE: GPM

FINAL STATUS OF WELL	☐ WATER SUPPLY ☐ ABANDONED (INSUFFICIENT SUPPLY) ☒ OBSERVATION WELL ☐ ABANDONED (POOR QUALITY) ☐ TEST HOLE ☐ UNFINISHED ☐ RECHARGE WELL ☐ DEWATERING
WATER USE	☐ DOMESTIC ☐ COMMERCIAL ☐ STOCK ☐ MUNICIPAL ☐ IRRIGATION ☐ PUBLIC SUPPLY ☐ INDUSTRIAL ☐ COOLING OR AIR CONDITIONING ☐ OTHER ☐ NOT USED
METHOD OF CONSTRUCTION	☐ CABLE TOOL ☐ BORING ☐ ROTARY (CONVENTIONAL) ☐ DIAMOND ☐ ROTARY (REVERSE) ☐ JETTING ☒ ROTARY (AIR) ☐ DRIVING ☐ AIR PERCUSSION ☐ DIGGING ☐ OTHER

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW



* Packer Test on 4" hole then reamed to 6¼".

117090

CONTRACTOR

NAME OF WELL CONTRACTOR	WELL CONTRACTOR'S LICENCE NUMBER
C. Hart & Sons Well Drilling Ltd.	2662
ADDRESS: Box 850, R.R.#1, Fenelon Falls, Ontario	
NAME OF WELL TECHNICIAN: Charlie Dugan	WELL TECHNICIAN'S LICENCE NUMBER
SIGNATURE OF TECHNICIAN/CONTRACTOR	SUBMISSION DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

Borehole 22-91
(continued)

OWNER'S COPY

FORM NO. 0506 (11/84) FORM 9

BOREHOLE NO. 23-91

PROJECT NAME Lindsay Landfill
PROJECT NO. 1080
CLIENT Hydroterra Limited
DATE Nov 18/19, 1991
BOREHOLE TYPE 108 mm Hollow Stem Augers
FIELD SUPERVISOR KF
GROUND ELEVATION 258.54 masl
ENGINEER LGB

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE ROD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % Wp / WL	REMARKS
1	SILTY SAND TILL Yellowish-brown, silty fine sand to sandy silt, occasional boulders; moist to wet; very dense			SS 1	50/75 mm						
2				2	63						
3				3	31						
4	MEDIUM TO COARSE SAND Brown, medium-coarse sand with some silt; saturated; dense to very dense			4	64						
				5	86						
	SILTY SAND TILL Grey, silty fine sand with some clay, gravel, occasional boulder; moist to wet; very dense			6	94						
5				7	50/100 mm						
				8	50/125 mm						
6				9	50/100 mm						
7				10	50/100 mm						
				11	50/100 mm						
8	MEDIUM TO COARSE SAND Grey; very dense; saturated			12	50/75 mm						
				13	50/75 mm						
9											

DRILL HOLE # reinstall 23-91 (2008)

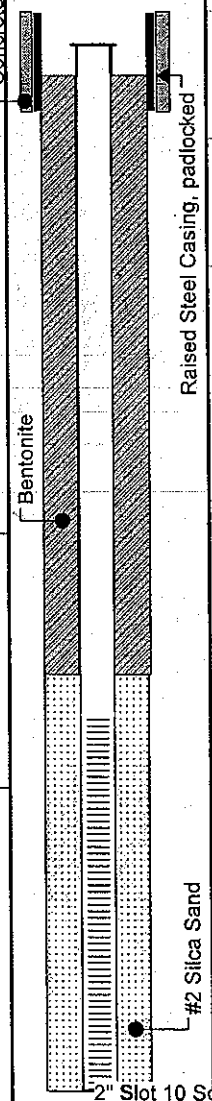
Date Drilled: Dec. 10, 2007
Rig: CME 55N
Contractor: Aardvark Drilling Inc.
Hammer Type: cathead

Location: Linsay/Ops Landfill
Elevation:
Co-ord: 683575 E, 4806619 N

Project No. 07-0384-00
Project: Kawartha Lakes
Client: City fo Kawartha Lakes

Depth (m)	Sample Type	Recovery	Number	Blows/0.15 m	Symbols	SOIL DESCRIPTION	Elevation	Depth
						Ground Surface	0	0
0						*TOPSOIL*	0	0
	SS	1		12		*FILL* sandy silt, some gravel trace clay, cobbles		
1								
2								
3	SS	2		34				
4							-13	13
						SILT grey, trace sand some sand seams		
5	SS	3		26				
6							-20	20
	SS	4		>50		*SAND TILL* silty, some gravel trace clay		
7								
8								
9								
	SS	5		>50				
10								

Well Installation



Moisture Content %
Wp |-----X-----| Wl
10 30 50 70 90

Pocket Penetrometer
kPa
100 200 300 400

SPT (N)
Blows/ft
10 20 30 40

Note: This borehole log has been prepared for geotechnical purposes and does not necessarily contain information suitable for an environmental assessment of the subsurface conditions.

Aardvark Drilling Inc.
25-C Lewis Road
Guelph, Ontario

BOREHOLE NO. 24-91

PROJECT NAME Lindsay Landfill
PROJECT NO. 1080
CLIENT Hydroterra Limited
DATE Nov 25, 19
BOREHOLE TYPE 108 mm Hollow Stem Augers
FIELD SUPERVISOR KF
GROUND ELEVATION 257.62 masl
ENGINEER LGB

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE ROD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % W_P W_L	REMARKS
0	TOPSOIL										
	SILTY SAND TILL Brown, dense to very dense silty sand; moist										
1											
	VARIABLE SAND AND SILTY LAYERS Brown, fine-medium sand at ± 2 metres; becoming fine sand and silt; dense to very dense; moist; wet at 2.4 metres			SS 1	58						
2				SS 2	57						
				SS 3	31						
3											
	SANDY TO CLAYEY SILT Grey, dense to very dense; wet			SS 4	66						
4											
	SILTY CLAY Grey, dense with gravel sizes			SS 5	35						
				SS 6	30						
5											
	SILTY SAND TILL Grey, silty sand with gravel; very dense; moist			SS 7	50/125 mm						
				SS 8	90/100 mm						
6											
				SS 9	100/100 mm						
7											
				SS 10	100/150 mm						
	COARSE SAND AND GRAVEL With trace silt, saturated										
8				SS 11	50/75 mm						
9				SS 12	50/50 mm						

PROJECT: 961-1529A

RECORD OF BOREHOLE BH-25-96-1

SHEET 1 OF 2

LOCATION: SEE PLAN

BORING DATE: MARCH 20&21/96

DATUM: GEODETIC

SAMPLER HAMMER, 63.5kg; DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m / SHEAR STRENGTH Cu, kPa (nat V - +, rem V - ⊕, Q - ●, U - O)	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT, PERCENT (Wp, W, Wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	TRACK MOUNTED CME 75 POWER AUGER 108mm I.D./203mm O.D. H.S.A.	GROUND SURFACE		258.96							
		Loose, dark brown, moist to wet silty topsoil, trace sand, trace clay. (FILL)		0.00	1	50 DO	8				CEMENT & CASING
				258.50							
1				0.46							
					2	50 DO	18				
2		Compact to very dense, brown, moist sandy SILT/silty SAND, some gravel, some clay, occ. thin silty clay layers. (TILL)									
					3	50 DO	55				Mar.23/96
3				255.30							
				3.66							
4					4	50 DO	60/ .05				BENTONITE GROUT
5											
					5	50 DO	60/ .13				
6		Very dense, grey, moist to wet sandy SILT, trace to some gravel, trace to some sand, occ. sand seams, occ. wet sand and gravel layers. (TILL)									
7					6	50 DO	86/ .15				
8											
9					7	50 DO	82/ .15				
10		Continued on Drillhole Log		249.03							
				9.93							
		CONTINUED ON NEXT PAGE									

DATA INPUT: PS JUNE 16/96

L1529251.BHS

SOILM6

DEPTH SCALE

1 to 50

Golder Associates

LOGGED: TM

CHECKED: PMM

PROJECT: 961-1529A

LOCATION: SEE PLAN

INCLINATION: -90 AZIMUTH:

RECORD OF BOREHOLE BH-25-96-1

DRILLING DATE: MARCH 21/96

DRILL RIG: CME-75

DRILLING CONTRACTOR: ALL-TERRAIN DRILLING LTD.

DATUM: GEODETIC

FR-FRACTURE, CL-CLEAVAGE, SH-SHEAR, VN-VEIN; F-FAULT, J-JOINT, P-POLISHED, S-SLICKENSIDED; SM-SMOOTH, R-ROUGH, ST-STEPPED, PL-PLANAR; FL-FLEXURED, UE-UNEVEN, W-WAVY, C-CURVED

DEPTH SCALE METRES	DESCRIPTION	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH / % RETURN	RECOVERY TOTAL CORE %	RECOVERY SOLID CORE %	R.Q.D. %	FRACT. INDEX PER .3 m	DISCONTINUITY DATA: DIP w.r.t. CORE AXIS	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY k, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES / WATER LEVELS / INSTRUMENTATION
10	CONTINUED FROM PREVIOUS PAGE	~~248.69~~												
	Continued from Borehole Log	10.07												
	Fresh, medium to dark grey, fine to medium grained, thinly to medium bedded, nodular textured LIMESTONE and argillaceous to shaly LIMESTONE. (BEDROCK)		1	0.089							FR,UE,ground FR,UE FR,UE x2 ground, missing core FR,UE x4 B,SM,ground,muddy FR,UE x2 FR,C FR,UE x3,ground missing core FR,UE x3			BENTONITE SEAL
11			2	0.079							B,UE x3 FR,UE x4 FR,UE x2 ground,missing core FR,UE x5 ground,missing core FR,UE x2 ground,missing core FR,UE x4			SILICA SAND
12														
13		245.82	3	0.083										
	END OF DRILLHOLE	13.14												Water level in monitoring well at elevation 256.21m on March 23,1996.
14														
15														
16														
17														
18														
19														
20														

DATA INPUT: PS JUNE 18/96

DEPTH SCALE:

1 to 50

Golder Associates

LOGGED: TM

DATE: MARCH 22/96

CHECKED: PMM

BOREHOLE NO. 26-91

PROJECT NAME Lindsay Landfill — **PROJECT NO.** 1080

CLIENT Hydroterra Limited — **DATE** Nov 26/27, 1991

BOREHOLE TYPE 108 mm Hollow Stem Augers — **FIELD SUPERVISOR** KF

GROUND ELEVATION 256.44 masl — **ENGINEER** LGB

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE ROD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % (Wp — WL)	REMARKS
0	TOPSOIL										
	SILTY SILT TILL										
	Light brown, silty sand with clay, gravel, dry to moist; very dense			SS 1	76						
1											
				SS 2	51						
2											
				SS 3	66/150 mm						
	SILTY SAND TILL										
3	Grey, silty sand with clay, gravel; moist; very dense			SS 4	50/125 mm						
				SS 5	64/150 mm						
4											
	SHALE, LIMESTONE			SS 6	50/75 mm						
	(possible boulder)			SS 7	50/100 mm						
5											

HYDROTERRA LIMITED
15 Glorie Place, Thornhill, Ontario L3T 3G7

BOREHOLE NO. 27-93

PROJECT NAME Lindsay Landfill
PROJECT NO. 1080
CLIENT Hydroterra Limited
DATE
BOREHOLE TYPE 150 mm Rotary
FIELD SUPERVISOR LB
GROUND ELEVATION 258.59 masl
ENGINEER LB

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE: TYPE	SAMPLE: 'N' VALUE	SAMPLE: % WATER	SAMPLE: % RECOVERY	SAMPLE: RQD (%)	CONE PENETRATION: SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % (Wp, WL)	REMARKS
	SAND, STONES (TILL) Brown										
5	CLAY, STONES (TILL) Brown										
10	CLAY, STONES (TILL) Grey										
15	LIMESTONE Grey										

Ontario Environment

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT	TOWNSHIP BOROUGH CITY TOWN VILLAGE (1-93)	CON BLOCK TRACT SURVEY ETC	LOT
Victoria	Ops Twp., Lindsay Landfill	Con.6	26
OWNER (SURNAME FIRST)	**ADDRESS**	**DATE COMPLETED**	
Town of Lindsay	Lindsay, Ontario	day 16 mo 02 yr 93	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
Brown	Top Soil			0	1
Brown	Sand	stones		1	10
Brown	Clay	stones		10	21
Gray	Clay	stones		21	36
Gray	Limestone			36	49'4"

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
37	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
43	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERALS ☐ GAS

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
6¼	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC	.188	+ 4	36
6¼	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE ☐ PLASTIC		36	49'4"
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			

SCREEN

SLOT NO. OF OPENING (IF KNOWN)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER ETC.)
0	20	Bensaal

PUMPING TEST

PUMPING TEST METHOD: ☒ PUMP ☐ BAILER

PUMPING RATE: 3 gpm — DURATION OF PUMPING: 3 hours ___ minutes

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☒ PUMPING ☐ RECOVERY			
		10 MINUTES	20 MINUTES	30 MINUTES	40 MINUTES
10.82 feet	20.40 feet	17.54 feet	18.76 feet	19.08 feet	19.50 feet

IF FLOWING GIVE RATE ___ gpm

PUMP SETTING AT 49 feet

WATER AT END OF TEST ☒ CLEAR ☐ CLOUDY

RECOMMENDED PUMP TYPE ☐ SHALLOW ☐ DEEP

RECOMMENDED PUMP SETTING ___ feet

RECOMMENDED PUMPING RATE ___ gpm

FINAL STATUS OF WELL

☐ WATER SUPPLY ☒ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL ☐ ABANDONED INSUFFICIENT SUPPLY ☐ ABANDONED POOR QUALITY ☐ UNFINISHED ☐ DEWATERING

WATER USE

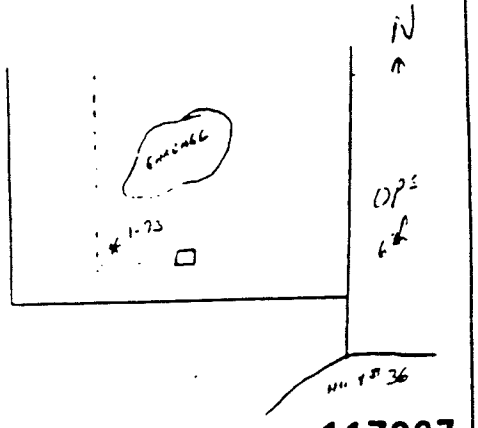
☐ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☐ COMMERCIAL ☐ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☐ NOT USED ☒ OTHER Mk. ... 11 4

METHOD OF CONSTRUCTION

☐ CABLE TOOL ☐ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☒ ROTARY (AIR) ☐ AIR PERCUSSION ☐ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING ☐ DIGGING ☐ OTHER

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW



DRILLER'S REMARKS

117087

CONTRACTOR

NAME OF WELL CONTRACTOR: G. Harr & Sons Well Drilling Ltd.
WELL CONTRACTOR'S LICENCE NUMBER: 2662
ADDRESS: Box 850, R.R.#1, Fenelon Falls, Ontario
NAME OF WELL TECHNICIAN: Charlie Duggan
WELL TECHNICIAN'S LICENCE NUMBER:
SIGNATURE OF TECHNICIAN/CONTRACTOR:
SUBMISSION DATE: day ___ mo ___ yr ___

OFFICE USE ONLY

Borehole 27-93

FORM NO. 0506 (11/88) FORM 9

OWNER'S COPY

Ontario Ministry of the Environment

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT	TOWNSHIP BOROUGH CITY TOWN VILLAGE	CON BLOCK TRACT SURVEY ETC	LOT
Victoria	Ops Twp. Lindsay (2-93) Landfill	Con. 6	26

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
Town of Lindsay	Lindsay, Ontario	DAY 17 MO 02 YR 93

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
Brown	Top Soil			0	1
Brown	Sand			1	6
Brown	Sandy Clay			6	19
Gray	Clay	stones		19	40
Gray	Limestone			40	59'4"

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER		
seeps	☐ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS	
	☐ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS	
	☐ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS	
	☐ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS	
	☐ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERALS ☐ GAS	

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
6¼	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC	.188	+ 2	40
6¼	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE ☐ PLASTIC		40	59'4"
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			

SCREEN

SCREEN - KIND OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER ETC.)
0	20	Benseal

PUMPING TEST

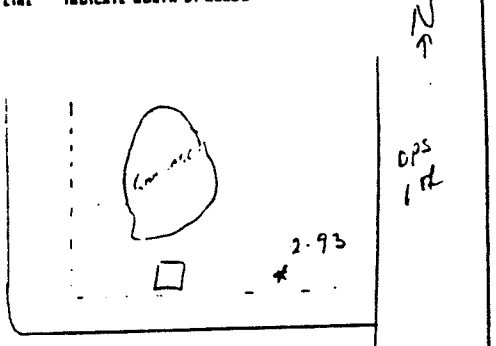
PUMPING TEST METHOD: ☒ PUMP ☐ BAILER
PUMPING RATE: varied from 1 to ½ GPM
DURATION OF PUMPING: 1 HOURS 55 MINS
STATIC LEVEL: 1.50 FEET
WATER LEVEL END OF PUMPING: 59 FEET
WATER LEVELS DURING: ☒ PUMPING ☐ RECOVERY

10 MINUTES	20 MINUTES	45 MINUTES	60 MINUTES
15.40 FEET	23.94 FEET	30.10 FEET	40.70 FEET

METHOD OF FLOWING (GAS LIFT ETC): GPM
PUMP INTAKE SET AT: 56.20 FEET
WATER AT END OF TEST: ☐ CLEAR ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☐ DEEP
RECOMMENDED PUMP SETTING: FEET
RECOMMENDED PUMPING RATE: GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW



DRILLERS REMARKS

117088

FINAL STATUS OF WELL	☐ WATER SUPPLY ☐ ABANDONED INSUFFICIENT SUPPLY ☒ OBSERVATION WELL ☐ ABANDONED POOR QUALITY ☐ TEST HOLE ☐ UNFINISHED ☐ RECHARGE WELL ☐ DEWATERING
WATER USE	☐ DOMESTIC ☐ COMMERCIAL ☐ STOCK ☐ MUNICIPAL ☐ IRRIGATION ☐ PUBLIC SUPPLY ☐ INDUSTRIAL ☐ COOLING OR AIR CONDITIONING ☒ OTHER monitoring ☐ NOT USED
METHOD OF CONSTRUCTION	☐ CABLE TOOL ☐ BOREING ☐ ROTARY (CONVENTIONAL) ☐ DIAMOND ☐ ROTARY (REVERSE) ☐ JETTING ☒ ROTARY (AIR) ☐ DRIVING ☐ AIR PERCUSSION ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: C. Hart & Sons Well Drilling Ltd.
WELL CONTRACTOR'S LICENCE NUMBER: 2662
ADDRESS: Box 850, R.R.#1, Fenelon Falls, Ontario
NAME OF WELL TECHNICIAN: Charlie Duggan
WELL TECHNICIAN'S LICENCE NUMBER:
SIGNATURE OF TECHNICIAN/CONTRACTOR:
SUBMITTED DATE: DAY MO YR

OFFICE USE ONLY

Borehole 28-93

FORM NO. 0506 (11/88) FORM 9

OWNER'S COPY

HYDROTERRA LIMITED
15 Glome Place, Thornhill, Ontario L3T 3G7

BOREHOLE NO. 28-93

PROJECT NAME Lindsay Landfill
PROJECT NO. 1080
CLIENT Hydroterra Limited
DATE
BOREHOLE TYPE 150 mm Rotary
FIELD SUPERVISOR LB
GROUND ELEVATION 258.64 masl
ENGINEER LB

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE: TYPE	SAMPLE: N VALUE	SAMPLE: % WATER	SAMPLE: % RECOVERY	SAMPLE: ROD (%)	CONE PENETRATION: SPT "N" VALUE / SHEAR STRENGTH	WATER CONTENT % (Wp, WL)	REMARKS
0	SAND brown										
	SANDY CLAY brown										
5											
	CLAY, STONES (TILL) Grey										
10											
	LIMESTONE Grey										
15											
20											

BOREHOLE NO. 29-93

PROJECT NAME Lindsay Landfill — **PROJECT NO.** 1080

CLIENT Hydroterra Limited — **DATE** April 12, 1993

BOREHOLE TYPE 108 mm Hollow Stem Augers — **FIELD SUPERVISOR** KF

GROUND ELEVATION 258.64 masl — **ENGINEER** LGB

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE ROD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % W P / W L	REMARKS
1	SILTY SAND TILL Light brown, silty sand with some clay, gravel; wet; loose to firm			SS 1	6						
2				SS 2	10						
3				SS 3	23						
4	MEDIUM TO COARSE SAND Grey, medium to coarse sand with silt and clay traces; wet; firm to very dense			SS 4	21						
5				SS 5	50/50 mm						

HYDROTERRA LIMITED
15 Glorne Place, Thornhill, Ontario L3T 3G7

BOREHOLE NO. 30-93

PROJECT NAME Lindsay Landfill
PROJECT NO. 1080
CLIENT Hydroterra Limited
DATE June 8, 1993
BOREHOLE TYPE 108 mm Hollow Stem Augers
FIELD SUPERVISOR LB
GROUND ELEVATION 248.89 masl
ENGINEER LB

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE ROD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT %	REMARKS
	TOPSOIL, silty wet			SS 1	9						
1	SILTY SAND TILL Yellowish brown, with some gravel, trace clay, rusty staining; compact to dense; moist			2	12						
2				3	30						
3				4	69						
	SILTY SAND TILL Grey, with some gravel, trace clay; very dense; moist to wet at bottom			5	71						
4				6	32						
5	Borehole terminated at 4.6 metres at auger refusal on assumed bedrock										
6											

HYDROTERRA LIMITED
15 Giannis Place, Thornhill, Ontario L3T 3G7

BOREHOLE NO. 31-93

PROJECT NAME: Lindsay Landfill
PROJECT NO.: 1080
CLIENT: Hydroterra Limited
DATE: June 8, 1993
BOREHOLE TYPE: 108 mm Hollow Stem Augers
FIELD SUPERVISOR: LB
GROUND ELEVATION: 249.21 masl
ENGINEER: LB

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE SS	SAMPLE 'N' VALUE	% WATER	% RECOVERY	RQD (%)	CONE PENETRATION / SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % (5 10 15) / Wp Wl	REMARKS
	TOPSOIL, silty, wet										
				1	4						
1	SILTY SAND TILL Yellowish brown with some gravel, trace clay; dense to very dense; moist			2	23						
2				3	64						
				4	90						
3	GRAVELLY TO SILTY SAND TILL Grey, with trace clay; dense to very dense; moist			5	55						
4				6	50						
5	Borehole terminated at 4.5 metres at auger refusal on assumed bedrock										
6											

HYDROTERRA LIMITED
15 Glamis Place, Thornhill, Ontario L3T 3G7

BOREHOLE NO. 32-93

PROJECT NAME Lindsay Landfill
PROJECT NO. 1080
CLIENT Hydroterra Limited
DATE June 9, 1993
BOREHOLE TYPE 108 mm Hollow Stem Augers
FIELD SUPERVISOR LB
GROUND ELEVATION 261.57 masl
ENGINEER LB

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE #	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION SPT "N" VALUE / SHEAR STRENGTH	WATER CONTENT % (5 10 15) Wp Wl	REMARKS
0	TOPSOIL, silty, wet			SS	1	8						Monitors installed in separate boreholes
1	SILTY SAND TILL Yellowish brown with some gravel, trace clay; to gravelly sand till at depth; dense to very dense; moist			SS	2	30						
2				SS	3	61						
				SS	4	60/150 mm						
3	SILTY SAND TILL Grey with some gravel, trace clay; very dense; moist to wet at bottom			SS	5	75/150 mm						
4												
				SS	6	100/150 mm						
5												
6												
				SS	7	60/150 mm						
7												
8	Borehole terminated at 7.0 metres at auger refusal on assumed bedrock											

HYDROTERRA LIMITED
16 Glamis Place, Thornhill, Ontario L3T 3G7

BOREHOLE NO. 33-93

PROJECT NAME Lindsay Landfill
PROJECT NO. 1080
CLIENT Hydroterra Limited
DATE June 9, 1993
BOREHOLE TYPE 108 mm Hollow Stem Augers
FIELD SUPERVISOR LB
GROUND ELEVATION 257.48 masl
ENGINEER LB

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE ROD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % 5 10 15 W P W L	REMARKS
	TOPSOIL, silty, wet			SS 1	6						Monitors installed in separate boreholes
1	SILTY SAND TILL Yellowish brown, with some gravel, trace clay; rusty staining; dense to very dense at depth; moist			SS 2	30						
2				SS 3	37						
3				SS 4	83						
				SS 5	55/150 mm						
4	SANDY GRAVEL TILL Grey, with some gravel, trace clay, grading to silty sand till at depth; very dense; moist to wet at bottom										
5				SS 6	50/150 mm						
6				SS 7	52/150 mm						
7	Borehole terminated at 6.6 metres at auger refusal on assumed bedrock										

HYDROTERRA LIMITED
15 Glamis Place, Thornhill, Ontario L3T 3G7

BOREHOLE NO. 34-93

PROJECT NAME: Lindsay Landfill
PROJECT NO.: 1080
CLIENT: Hydroterra Limited
DATE: June 9, 1993
BOREHOLE TYPE: 108 mm Hollow Stem Augers
FIELD SUPERVISOR: LB
GROUND ELEVATION: 256.24 masl
ENGINEER: LB

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE MOD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % 5 10 15 Wp Wl	REMARKS
	TOPSOIL, silty, wet			SS 1	8						
1	SILTY SAND TILL Yellowish brown with some gravel, trace clay; firm to dense at depth; wet near surface to moist at depth			SS 2	8						
2				SS 3	63						
				SS 4	51/150 mm						
3	SILTY SAND TILL Grey, with some gravel, trace clay; very dense; moist			SS 5	50/150 mm						
4											
5				SS 6	85						

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Environmental Field Services

BOREHOLE LOG 35 - 93

PROJECT NAME: LINDSAY LANDFILL — PROJECT No.:
CLIENT: HYDROTERRA LIMITED — DATE: OCT 12, 1993
BOREHOLE TYPE: 200 mm O.D. HOLLOW STEM AUGERS — GEOLOGIST: EJK
GROUND ELEVATION: +/- 258.06 m A.S.L. — REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS	SAMPLE #	TYPE	% WATER	N VALUE	% RECVRY	COMMENTS
0.2	TOPSOIL		1	SS	17	45		
	SANDY SILT TILL: LIGHT BROWN WITH STONES, MOIST TO WET.							
1.0			2	SS	8	30		
			3	SS	7	24		
2.0								
2.4								CAVE FROM 3.3m TO 5.9 m
	SANDY SILT: BROWN TO GREY FINE TO MEDIUM SAND, BROWN, SATURATED, TILL-LIKE.		4	SS	19	35		
3.0								
			5	SS	18	43		
3.8								
4.0	SILTY SAND TO SANDY SILT TILL: GREY, STONIER WITH DEPTH, MOIST, VERY DENSE.		6	SS	9	91		STONIER AND DENSER WITH DEPTH
			7	SS	7	86		
5.0								
6.0			8	SS	6	70 FOR 76 mm		
7.0								MONITORS IN SEPARATE BOREHOLES
8.0			9	SS	9	43		

N VALUE: 20 40 60 — % WATER: 10 20 30

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Environmental Field Services

BOREHOLE LOG 35 - 93 CONT'D

PROJECT NAME: LINDSAY LANDFILL — PROJECT No.:
CLIENT: HYDROTERRA LIMITED — DATE: OCT 12, 1993
BOREHOLE TYPE: 200 mm HOLLOW STAEM AUGERS — GEOLOGIST: EJK
GROUND ELEVATION: +\- 258.06 m A.S.L. — REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE % WATER	SAMPLE N VALUE	SAMPLE % RECVRY	N VALUE 20 40 60	% WATER 10 20 30	COMMENTS
8.2									
	BOREHOLE TERMINATED AT 8.2 m ON ASSUMED BEDROCK								
9.0									
10.0									
11.0									
12.0									
13.0									
14.0									
15.0									
16.0									

EFS
Environmental Field Services

BOREHOLE LOG 36 - 93

PROJECT NAME: LINDSAY LANDFILL
CLIENT: HYDROTERRA LIMITED
BOREHOLE TYPE: 200 mm HOLLOW STAEM AUGERS
GROUND ELEVATION: +\- 257.64 m A.S.L

PROJECT No.:
DATE: OCT 12, 1993
GEOLOGIST: EJK
REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS	SAMPLE # TYPE	% WATER	N VALUE	% RECVRY	N VALUE 20 40 60	% WATER 10 20 30	COMMENTS
0.2	TOPSOIL								
	SILTY SAND TILL : LIGHT BROWN, MOIST TO WET, FINER AT TOP, INCREASE IN STONE CONTENT WITH DEPTH.		1 SS	19	9				
1.0			2 SS	10	14				
2.0			3 SS	18	27				
2.6			4 SS	10	22				
3.0	SAND: GREY FINE SANDY SILT SILTY FINE SAND. COARSER WITHE DEPTH TO MED SAND. WET TO SATURATED.		5 SS	14	8				
4.0			6 SS	7	52				
4.3									
4.4	SANDY TILL: GREY SANDY SILT TO SILTY SAND TILL MOIST TO WET.								
5.0	BOREHOLE TERMINATED AT 4.4 m.								
6.0									
7.0									
8.0									

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Environmental Field Services

BOREHOLE LOG 37 - 93

PROJECT NAME: LINDSAY LANDFILL — PROJECT No.: _____
CLIENT: HYDROTERRA LIMITED — DATE: OCT 13, 1993
BOREHOLE TYPE: 200 mm HOLLOW STAEM AUGERS — GEOLOGIST: EJK
GROUND ELEVATION: +/- 257.96 mA.S.L. — REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS I / II	SAMPLE #	TYPE	% WATER	N VALUE	% RECVRY	N VALUE 20 40 60	% WATER 10 20 30	COMMENTS
0.1	TOPSOIL									
	SANDY SILT TILL: BROWN TO LIGHT BROWN, MOIST TO WET, MINOR AND RANDOM FRACTURING. GRAVELLY.		1	SS	29	4				
1.0			2	SS	26	12				
			3	SS	8	10				
2.0										
2.3										
	SILTY SAND : LIGHT BROWN TO GREY, SATURATED.		4	SS	17	44				CAVE TO 2.8 m INTERMITTENT NATIVE SOILS AND BENTONITE BACKFILL.
2.9										
3.0	SANDY SILT TO SILTY SAND TILL: GREY, BECOMING DENSER WITH DEPTH. SILTY GRAVELLY SAND LAYER 0.05m THICK AT 5.2 m, MOIST TO WET.		5	SS	17	39				HARD DRILLING
4.0			6	SS	9	58				
5.0	SILTY GRAVELLY SAND TRACE CLAY		7	SS	11	31				
6.0			8	SS	10	65 FOR 127 mm				
7.0										
8.0										AUGER REFUSAL AT 8.2 m. SLIT SPOON REFUSAL.

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BOREHOLE LOG 37 - 93 CONT'D

PROJECT NAME: LINDSAY LANDFILL
CLIENT: HYDROTERRA LIMITED
BOREHOLE TYPE: 200 mm HOLLOW STAEM AUGERS
GROUND ELEVATION: +\- 257.96 m A.S.L.

PROJECT No.:
DATE: OCT 13, 1993
GEOLOGIST: EJK
REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS	SAMPLE #	SAMPLE TYPE	SAMPLE % WATER	SAMPLE N VALUE	SAMPLE % RECVRY	N VALUE 20 40 60	% WATER 10 20 30	COMMENTS
8.2										MONITORS IN SEPARATE BOREHOLES
	BOREHOLE TERMINATED AT 8.2 m ON ASSUMED BEDROCK.									
9.0										
10.0										
11.0										
12.0										
13.0										
14.0										
15.0										
16.0										

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Environmental Field Services

BOREHOLE LOG 38 - 93

PROJECT NAME: LINDSAY LANDFILL — PROJECT No.:
CLIENT: HYDROTERRA LIMITED — DATE: OCT 13, 1993
BOREHOLE TYPE: 200 mm HOLLOW STAEM AUGERS — GEOLOGIST: EJK
GROUND ELEVATION: +\- 258.60 m A.S.L. — REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS	SAMPLE #	SAMPLE TYPE	SAMPLE % WATER	SAMPLE N VALUE	SAMPLE % RECVRY	N VALUE 20 40 60	% WATER 10 20 30	COMMENTS
0.3	TOPSOIL									
	SANDY SILT TILL: YELLOW BROWN TO LIGHT BROWN. MOIST TO WET BECOMING SATURATED WITH DEPTH. RUST COLOURED STIFF TO VERY STIFF.		1	SS	14	3				
1.0			2	SS	12	10				
2.0			3	SS	8	12				
2.6										
	SANDY SILT TO SILTY SAND: GREY, WET, BECOMING MORE DENSE WITH DEPTH, MINOR SAND LAYERS THROUGHOUT TILL UP TO 6 cm THICK.		4	SS	10	15				
3.0			5	SS	6	55				
4.0			6	SS	5	50 FOR 127 mm				
4.0	BOREHOLE TERMINSTED AT 4.0 m.									
5.0										
6.0										
7.0										
8.0										

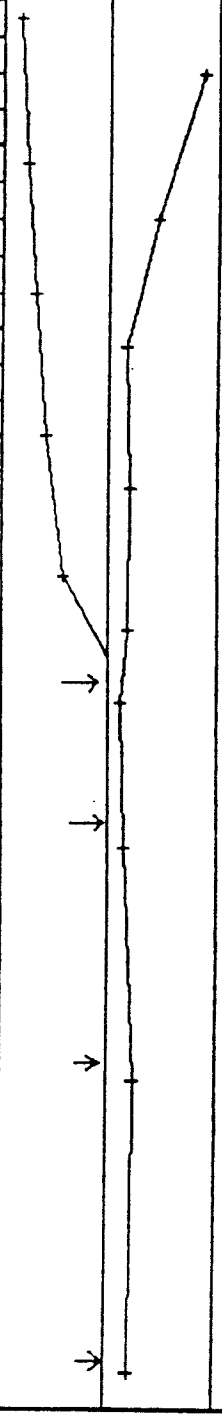
EFS
Environmental Field Services

BOREHOLE LOG 39 - 93

PROJECT NAME: LINDSAY LANDFILL
CLIENT: HYDROTERRA LIMITED
BOREHOLE TYPE: 200 mm HOLLOW STAEM AUGERS
GROUND ELEVATION: +/- 259.08 m A.S.L.

PROJECT No.:
DATE: OCT 13, 1993
GEOLOGIST: EJK
REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS	SAMPLE #	TYPE	% WATER	N VALUE	% RECVRY	N VALUE 20 40 60	% WATER 10 20 30	COMMENTS
0.2	TOPSOIL									
	SILTY SAND TO SANDY SILT TILL: LIGHT BROWN, TRACE TO SOME CLAY, WET TO MOIST RUST COLOURED STAINING NUMEROUS STONES.		1	SS	38	8				
1.0			2	SS	19	19				
			3	SS	7	22				
2.0										
			4	SS	8	28				HARD DRILLING
3.0										
	SANDY SILT TO SAND TILL: GREY, STONY, MOIST. LAYERED DRILLING FROM TILL TO BOULDERS EVERY 100 TO 150 mm STARTING AT 6.1 m.		5	SS	7	52				
4.0			6	SS	4	60 FOR 100 mm				
			7	SS	6	75 FOR 150 mm				NATURAL CAVE 4.6 - 7.3 m.
5.0										
6.0			8	SS	10	85 FOR 150 mm				
7.0										
			9	SS	9	110 FOR 127 mm				
8.0										



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Environmental Field Services

BOREHOLE LOG 41 - 93

PROJECT NAME: LINDSAY LANDFILL
CLIENT: HYDROTERRA LIMITED
BOREHOLE TYPE: 200 mm HOLLOW STAEM AUGERS
GROUND ELEVATION: +/- 257.12 m A.S.L.

PROJECT No.:
DATE: OCT 14, 1993
GEOLOGIST: EJK
REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS I II	SAMPLE #	TYPE	% WATER	N VALUE	% RECVRY	N VALUE 20 40 60	% WATER 10 20 30	COMMENTS
0.2	TOPSOIL									
	SANDY SILT TO SILTY SAND TILL: LIGHT BROWN, RUST COLOURED STAINS, BECOMING MOIST TO WET WITH DEPTH. COBBLY.		1	SS	18	3				
1.0			2	SS	8	18				
2.0			3	SS	9	63 FOR 150 mm				
			4	SS	5	64 FOR 150 mm				
3.0										
3.1	SILTY SAND TILL: GREY, STONY, VERY DENSE, MOIST TO WET.		5	SS	9	70 FOR 150 mm				COBBLY DIFFICULT DRILLING
4.0			6	SS	8	50 FOR 50 mm				
5.0			7	SS	5	100 FOR 100 mm				
6.0										AUGER REFUSAL AT 6.1 m
6.1	BOREHOLE TERMINATED AT 6.1 m ON ASSUMED BEDROCK									
7.0										
8.0										

EFS
Environmental Field Services

BOREHOLE LOG 42 - 93

PROJECT NAME: LINDSAY LANDFILL
CLIENT: HYDROTERRA LIMITED
BOREHOLE TYPE: 200 mm HOLLOW STAEM AUGERS
GROUND ELEVATION: +\- 256.61 m A S L

PROJECT No.:
DATE: OCT 18, 1993
GEOLOGIST: EJK
REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS I II	SAMPLE # TYPE	% WATER	N VALUE	% RECVRY	N VALUE 20 40 60	% WATER 10 20 30	COMMENTS
0.2	TOPSOIL								
	SILTY SAND TILL: LIGHT BROWN, MOIST TO WET, STONY, SOME COBBLES.		1 SS	10	7				
1.0			2 SS	8	38				
2.0			3 SS	8	57				
			4 SS	9	35 FOR 76 mm		→		
3.0									
3.1	STONY SILTY SAND TILL: GREY, STONY, MOIST, VERY DENSE.		5 SS	9	60 FOR 150 mm		→		STONY AND BOULDERY DRILLING
4.0									
			6 SS	7	56 FOR 250 mm		→		
5.0			7 SS	7	66				
6.0									
			8 SS	7	50 FOR 25 mm		→		
6.7									AUGER REFUSAL
7.0	BOREHOLE TERMINATED AT 6.7 m ON ASSUMED BEDROCK.								
8.0									

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Environmental Field Services

BOREHOLE LOG 43 - 93

PROJECT NAME: LINDSAY LANDFILL
CLIENT: HYDROTERRA LIMITED
BOREHOLE TYPE: 200 mm HOLLOW STAEM AUGERS
GROUND ELEVATION: +\- 260.95 m A.S.L.

PROJECT No.:
DATE: OCT 18, 1993
GEOLOGIST: EJK
REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS I II	SAMPLE # TYPE	% WATER	N VALUE	% RECVRY	N VALUE 20 40 60	% WATER 10 20 30	COMMENTS
0.2	TOPSOIL								
	SILTY SAND TO SANDY SILT TILL: LIGHT BROWN, STONY, WET TO SATURATED, COBBLY. GRAVELLY.		1 SS	11					
1.0			2 SS	9	15				
2.0			3 SS	8	16				
			4 SS	9	31				
3.0									
3.1	SILTY SAND TILL: GREY, COBBLY, WET TO SATURATED, BECOMING SANDIER WITH DEPTH. STONE CONTENT DECREASING WITH DEPTH. SILT CONTENT INCREASING WITH DEPTH.		5 SS	9	24				
4.0			6 SS	6	90				
5.0			7 SS	8	66				
6.0			8 SS	6	50 FOR 100 mm				
7.0			9 SS	-----	50 FOR 25 mm				
8.0									

EFS
Environmental Field Services

BOREHOLE LOG 43 - 93 CONT'D

PROJECT NAME: LINDSAY LANDFILL
CLIENT: HYDROTERRA LIMITED
BOREHOLE TYPE: 200 mm HOLLOW STAEM AUGERS
GROUND ELEVATION: +\- 260.95 m A.S.L.

PROJECT No.:
DATE: OCT 18, 1993
GEOLOGIST: EJK
REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS	SAMPLE # TYPE	SAMPLE % WATER	SAMPLE N VALUE	SAMPLE % RECVRY	N VALUE 20 40 60	% WATER 10 20 30	COMMENTS
8.3	BOREHOLE TERMINATED AT 8.3 m ON ASSUMED BEDROCK								MONITORS IN SEPARATE BOREHOLES
9.0									
10.0									
11.0									
12.0									
13.0									
14.0									
15.0									
16.0									

EFS
Environmental Field Services

BOREHOLE LOG 44 - 93

PROJECT NAME: LINDSAY LANDFILL
CLIENT: HYDROTERRA LIMITED
BOREHOLE TYPE: 200 mm HOLLOW STAEM AUGERS
GROUND ELEVATION: +\- 262.71 m A.S.L

PROJECT No.:
DATE: OCT 19, 1993
GEOLOGIST: EJK
REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS I II	SAMPLE # TYPE	% WATER	N VALUE	% RECVRY	N VALUE 20 40 60	% WATER 10 20 30	COMMENTS
0.2	TOPSOIL								
	SILTY SAND TILL: LIGHT BROWN, GRAVELLY, NUMEROUS BOULDERS, RUST STAINING, MOIST TO WET. AT 2.3 m A 200 mm THICK FINE SAND, SATURATED.		1 SS	7	8				
1.0			2 SS	8	18				
2.0			3 SS	8	47				
			4 SS	7	91				
3.0									
3.1	CLAYEY SILT: GREY, MOIST, TRACE TO SOME SAND INCREASING WITH DEPTH, TRACE GRAVEL.		5 SS	0.5	50 FOR 75 mm				
4.0			6 SS	11	100 FOR 150 mm				
			7 SS	9	75 FOR 100 mm				
5.0									
6.0			8 SS	8	100 FOR 127 mm				
7.0									
7.02	SANDY SILT TILL: GREY, MOIST VERY DENSE, STONY.		9SS	-----	58 FOR 25 mm				
8.0									

EFS
Environmental Field Services

BOREHOLE LOG 44 - 93 CONT'D

PROJECT NAME: LINDSAY LANDFILL
CLIENT: HYDROTERRA LIMITED
BOREHOLE TYPE: 200 mm HOLLOW STAEM AUGERS
GROUND ELEVATION: +\- 262.71 m A.S.L

PROJECT No.:
DATE: OCT 19, 1993
GEOLOGIST: EJK
REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS	SAMPLE # TYPE	SAMPLE % WATER	SAMPLE N VALUE	SAMPLE % RECVRY	N VALUE 20 40 60	% WATER 10 20 30	COMMENTS
8.8									AUGER REFUSAL AT 4.3 m AT FIRST ATTEMPT INSTALLED SHALLOW MONITOR MOVED AHEAD 3 m AND REDRILLED
9.0	BOREHOLE TERMINATED AT 8.8 m ON ASSUMED BEDROCK								MONITORS IN SEPARATE BOREHOLES
10.0									
11.0									
12.0									
13.0									
14.0									
15.0									
16.0									

EFS
Environmental Field Services

BOREHOLE LOG 45 - 93

PROJECT NAME: LINDSAY LANDFILL — PROJECT No.:
CLIENT: HYDROTERRA LIMITED — DATE: OCT 20, 1993
BOREHOLE TYPE: 200 mm HOLLOW STAEM AUGERS — GEOLOGIST: EJK
GROUND ELEVATION: +/- 266.12 m A.S.L. — REVIEWER: LB

DEPTH m	STRATIGRAPHY	MONITOR DETAILS	SAMPLE #	TYPE	% WATER	N VALUE	% RECVRY	COMMENTS
	TOPSOIL		1	SS	27	8		
0.6								
	SILTY SAND TO SANDY SILT TILL: LIGHT BROWN, MOIST VERY DENSE, NUMEROUS STONES AND BOULDERS. SAND CONTENT INCREASING WITH DEPTH. RUST COLOURED STAINING.		2	SS	7	41		BOULDERY DRILLING FROM 1.4 m.
2.0			3	SS	9	25		
			4	SS	12	61		
3.0			5	SS	8	90		
4.0			6	SS	6	93		
			7	SS	7	100 FOR 250 mm		
5.0								
5.2								
5.3	SILT TILL: GREY, DENSE, MOIST, MINOR RUST STAINING. BOREHOLE TERMINATED AT 5.3 m.		8	SS	7	117 FOR 250 mm		20 L OF WATER ADDED TO HYDRATE BENTONITE
6.0								
7.0								
8.0								

N VALUE: 20 40 60
% WATER: 10 20 30

HYDROTERRA LIMITED
15 Glamis Place, Thornhill, Ontario L3T 3G7

BOREHOLE NO. 45-95

PROJECT NAME Lindsay Lagoon Investigation
PROJECT NO. 1080L
CLIENT Lindsay/Victoria
DATE November 30, 1994
BOREHOLE TYPE 108 mm Hollow Stem; 75 mm Diamond Drill
FIELD SUPERVISOR KF
GROUND ELEVATION 251.31 masl
ENGINEER KF

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS I	MONITOR DETAILS II	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE ROD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % W_P W_L	REMARKS
1	SILTY SAND TILL Yellowish to light brown, with some gravel and trace clay; compact to very dense at depth; moist; saturated sand/gravel seams at 1.5, 3.7 and 4.5 metres		Grout	Grout	SS 1	25						
2					SS 2	24						
3					SS 3	25						
4					SS 4	83						
5					SS 5	194						
6					SS 6	60/75 mm						
7					SS 7	162/150 mm						
8	LIMESTONE BEDROCK Light to medium grey; fine to medium grained; faintly bedded with occasional argillaceous partings; broken rock in upper 0.5 metres and no discernable open fractures at depth											
9	Borehole terminated at 7.62 metres. Monitors I and II are installed in separate boreholes											
10												

HYDROTERRA LIMITED
15 Glamis Place, Thornhill, Ontario L3T 3G7

BOREHOLE NO. 46-95

PROJECT NAME Lindsay Lagoon Investigation
PROJECT NO. 1080L
CLIENT Lindsay/Victoria
DATE April 6, 1995
BOREHOLE TYPE 108 mm Hollow Stem; 75 mm Diamond Drill
FIELD SUPERVISOR KF
GROUND ELEVATION 254.33 masl
ENGINEER KF

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS I	MONITOR DETAILS II	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE ROD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % Wp	WATER CONTENT % WL	REMARKS
1	**FILL** Brown, sandy clay with trace gravel; very dense			Bentonite	SS 1	44							
2													
3					SS 2	14							
4	**SILTY SAND TILL** Yellowish to light brown, with some gravel and trace clay; occasional sand seams; compact to dense; moist to wet				SS 3	9							
5					SS 4	39							
6			Grout		SS 5	13							
7					SS 6	35							
8	**SILTY SAND TILL** Grey, with some gravel and trace clay; occasional sand seams; compact; wet; sand/gravel layer at 10.0 metres				SS 7	23							
9					SS 8	14							
10					SS 9	18							

HYDROTERRA LIMITED
15 Glamis Place, Thornhill, Ontario L3T 3G7

BOREHOLE NO. 46-95 (cont'd)

PROJECT NAME Lindsay Lagoon Investigation
PROJECT NO. 1080L
CLIENT Lindsay/Victoria
DATE April 6, 1995
BOREHOLE TYPE 108 mm Hollow Stem; 75 mm Diamond Drill
FIELD SUPERVISOR KF
GROUND ELEVATION 254.33 masl
ENGINEER KF

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS I	MONITOR DETAILS II	SAMPLE TYPE	SAMPLE 'N' VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION SPT 'N' VALUE / SHEAR STRENGTH	WATER CONTENT % Wp Wl	REMARKS
					SS	10	41					
11	LIMESTONE BEDROCK Light to medium grey; fine to medium grained; faintly bedded with occasional argillaceous partings; broken rock in upper 0.3 metres and no discernable open fractures at depth											
12												
13												
14												
15												
16	Borehole terminated at 14.93 metres. Monitors I and II are installed in separate boreholes											
17												
18												
19												
20												

PROJECT: 961-1529A

RECORD OF BOREHOLE BH-47-96-1

SHEET 1 OF 2

LOCATION: SEE PLAN

BORING DATE: MARCH 22/96

DATUM: GEODETIC

SAMPLER HAMMER, 63.5kg; DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m / SHEAR STRENGTH Cu, kPa (nat V - +, rem V - ⊕, Q - ●, U - ○)	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT, PERCENT (Wp, W, Wl; 5, 10, 15, 20)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	TRACK MOUNTED CME 75 POWER AUGER 108mm I.D./203mm O.D. H.S.A.	GROUND SURFACE		254.38 0.00	1	50 DO	51				CEMENT & CASING
1					2	50 DO	9				Mar.23/96
2		Loose to compact, brown to greyish brown, moist to wet, sandy silt with sand and gravel layers and silty sand, trace clay layers, occ. cobbles, occ. organic matter. (FILL)			3	50 DO	28				
3					4	50 DO	26				
4					5	50 DO	24				BENTONITE GROUT
5					6	50 DO	1				
6		Compact, brown, moist to wet, sandy SILT/silty SAND, some gravel, some clay, thin to medium thick layers of silty clay and fine to medium sand at 7.06m to 8.23m. (TILL)		249.35 5.03	7	50 DO	12				
7					8	50 DO	17				
8					9	50 DO	20		○	MH	
9					10	50 DO	57				
10					11	50 DO	57				
		Bedrock inferred		245.95	12	50 DO	50/.10				BENTONITE SEAL
		Continued on Drillhole Log		8.48							
		CONTINUED ON NEXT PAGE									

L1529471.BHS

DATA INPUT: PS JUNE 18/96

SOILM6

DEPTH SCALE

1 to 50

Golder Associates

LOGGED: TM

CHECKED: PMM

PROJECT: 961-1529A

RECORD OF BOREHOLE BH-47-96-1

SHEET 2 OF 2

LOCATION: SEE PLAN

DRILLING DATE: MARCH 22/96

DATUM: GEODETIC

INCLINATION: -90 AZIMUTH:

DRILL RIG: CME-75

DRILLING CONTRACTOR: ALL-TERRAIN DRILLING LTD.

FR-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED
CL-CLEAVAGE J-JOINT R -ROUGH UE-UNEVEN
SH-SHEAR P-POLISHED ST-STEPPED W -WAVY
VN-VEIN S-SLICKENSIDED PL-PLANAR C -CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min.)	FLUSH / COLOUR % RETURN	RECOVERY TOTAL CORE %	RECOVERY SOLID CORE %	R.Q.D. %	FRACT. INDEX PER .3 m	DISCONTINUITY DATA DIP w.r.t. CORE AXIS	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY k, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
7		CONTINUED FROM PREVIOUS PAGE														
8		Continued from Borehole Log		245.95												
				8.43									MF			
					1	0.061							MF			
9													MF			BENTONITE SEAL
		Fresh, light to medium grey, medium grained, medium to thickly bedded, stylolitic LIMESTONE with occ. slightly fossiliferous horizons. (BEDROCK)			2	0.075							Broken Core			
10													FR,UE			
													FR,UE			
													FR,UE			
					3	0.069							FR,UE,BC			
													MF			SILICA SAND
11													FR,UE x2,BC			
					4	0.074							FR,UE			
													FR,UE			
													FR,UE			
				242.84												
		END OF DRILLHOLE		11.54												Water level in monitoring well at elevation 253.56m on March 23,1996.
12																
13																
14																
15																
16																
17																

DATA INPUT: PS JUNE 16/96

DEPTH SCALE:

1 to 50

Golder Associates

LOGGED: TM

DATE: MARCH 22/96

CHECKED: PMM

PROJECT: 961-1529A

RECORD OF BOREHOLE BH-47-96-2

SHEET 1 OF 1

LOCATION: SEE PLAN

BORING DATE: MARCH 22/96

DATUM: GEODETIC

SAMPLER HAMMER, 63.5kg; DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m / SHEAR STRENGTH Cu, kPa (nat V - +, rem V - ⊕, Q - ●, U - ○)	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT, PERCENT (Wp, W, Wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	TRACK MOUNTED CME 75 POWER AUGER 108mm I.D./203mm O.D. H.S.A.	GROUND SURFACE		254.29 / 0.00							CEMENT & CASING
1											Mar.23/96
2											BENTONITE GROUT
3											
4		No samples collected. Refer to BH-47-96-1 for stratigraphy.									
5											
6											BENTONITE SEAL
7											SILICA SAND
8		END OF BOREHOLE		246.22 / 8.07							Water level in monitoring well at elevation 253.58m on March 23,1996.
9											
10											

DEPTH SCALE

1 to 50

Golder Associates

LOGGED: TM

CHECKED: PMM

L1529472.BHS

DATA INPUT: PS JUNE 18/96

SOILM6

PROJECT: 961-1529A

RECORD OF BOREHOLE BH-48-96-1

SHEET 1 OF 2

LOCATION: SEE PLAN

BORING DATE: MARCH 21/96

DATUM: GEODETIC

SAMPLER HAMMER, 63.5kg; DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m / SHEAR STRENGTH Cu, kPa (nat V - +, rem V - ⊕, Q - ●, U - O)	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT, PERCENT (Wp, W, Wl; 5, 10, 15, 20)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	TRACK MOUNTED CME 75 POWER AUGER 108mm I.D./203mm O.D. H.S.A.	GROUND SURFACE		254.85							
		Dark brown sandy topsoil, some silt. (FILL)		0.00	1	50 DO	56/.15				CEMENT & CASING
1											Mar.23/96
2					2	50 DO	6				
3		Loose to compact, brown to brownish grey, moist to wet silty sand with pockets of dark brown sandy topsoil, sand and gravel and grey sand, occ. organic matter. (FILL)			3	50 DO	14				
4											BENTONITE GROUT
5					4	50 DO	9				
6					5	50 DO	10				
7				247.61							
		Compact, grey, wet sandy SILT, some sand lenses, trace to some gravel, trace to some clay.		7.24	6	50 DO	19		O	MH	
8				246.32							
		Very dense, grey, wet silty SAND, some gravel. (TILL)		8.53							
9					7	50 DO	89/.18				BENTONITE SEAL
		Bedrock inferred		245.47							
		Continued on Drillhole Log		9.45							
10		CONTINUED ON NEXT PAGE									

DATA INPUT: PS JUNE 18/96

SOILM6

DEPTH SCALE

1 to 50

Golder Associates

LOGGED: TM

CHECKED: PMM

PROJECT: 961-1529A

LOCATION: SEE PLAN

INCLINATION: -90 AZIMUTH:

RECORD OF BOREHOLE BH-48-96-1

SHEET 2 OF 2

DRILLING DATE: MARCH 22/96

DRILL RIG: CME-75

DRILLING CONTRACTOR: ALL-TERRAIN DRILLING LTD.

DATUM: GEODETIC

FR-FRACTURE, CL-CLEAVAGE, SH-SHEAR, VN-VEIN; F-FAULT, J-JOINT, P-POLISHED, S-SLICKENSIDED; SM-SMOOTH, R-ROUGH, ST-STEPPED, PL-PLANAR; FL-FLEXURED, UE-UNEVEN, W-WAVY, C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	RUN No.	PENETRATION RATE (m/min.)	FLUSH / % RETURN	RECOVERY: TOTAL CORE %	RECOVERY: SOLID CORE %	R.Q.D. %	FRACT. INDEX PER .3 m	DISCONTINUITY DATA: DIP w.r.t CORE AXIS	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY k, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES / WATER LEVELS / INSTRUMENTATION
8		CONTINUED FROM PREVIOUS PAGE														
9		Continued from Borehole Log		245.47												
				9.38								90	FR,UE			
												90	FR,UE			
												90	FR,UE x2			
												90	FR,UE			BENTONITE SEAL
10					1	0.119						90	FR,UE,ground			
												90	FR,UE,ground,missing core			
		Fresh, light to medium grey, medium grained, medium to thickly bedded, stylolitic LIMESTONE with occ. slightly fossiliferous horizons. (BEDROCK)										90	FR,UE			
11												90	FR,UE			
												90	FR,UE			SILICA SAND
												90	FR,UE,ground			
					2	0.128						90	FR,UE x3 Broken Core, ground			
12												90	MF			
				242.39								90	FR,UE			
		END OF DRILLHOLE		12.46												Water level in monitoring well at elevation 253.82m on March 23, 1996.
13																
14																
15																
16																
17																
18																

DATA INPUT: PS JUNE 18/96

DEPTH SCALE:

1 to 50

Golder Associates

LOGGED: TM

DATE: MARCH 22/96

CHECKED: PMM

PROJECT: 961-1529A

RECORD OF BOREHOLE BH-48-96-2

SHEET 1 OF 1

LOCATION: SEE PLAN

BORING DATE: MARCH 22/96

DATUM: GEODETIC

SAMPLER HAMMER, 63.5kg; DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m / SHEAR STRENGTH Cu, kPa (nat V - +, rem V - ⊕, Q - ●, U - ○)	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT, PERCENT (Wp, W, Wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	TRACK MOUNTED CME 75 POWER AUGER 108mm I.D./203mm O.D. H.S.A.	GROUND SURFACE		254.83 / 0.00							CEMENT & CASING
1											Mar.23/96
2											BENTONITE GROUT
3											
4		No samples collected. Refer to BH-48-96-1 for stratigraphy.									
5											
6											BENTONITE SEAL
7											SILICA SAND
8											
9		END OF BOREHOLE		246.09 / 8.74							Water level in monitoring well at elevation 253.97m on March 23,1996.
10											

DEPTH SCALE

1 to 50

Golder Associates

LOGGED: TM

CHECKED: PMM

L1529482.BHS

DATA INPUT: PS JUNE 18/96

SOILM6

PROJECT: 961-1529A

RECORD OF BOREHOLE BH-49-96-1

SHEET 1 OF 3

LOCATION: SEE PLAN

BORING DATE: MARCH 19/96

DATUM: GEODETIC

SAMPLER HAMMER, 63.5kg; DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m; SHEAR STRENGTH Cu, kPa (nat V -, rem V -, Q -, U -)	HYDRAULIC CONDUCTIVITY, k, cm/s; WATER CONTENT, PERCENT (Wp, W, Wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	TRACK MOUNTED CME 75 POWER AUGER 108mm I.D./203mm O.D. H.S.A.	GROUND SURFACE		265.31							
		Dark brown silty topsoil, some sand, trace clay, rootlets.		0.00 264.98 0.33	1	50 DO	5				CEMENT & CASING
1					2	50 DO	9				
		Loose to compact, brown, moist to wet sandy SILT/silty SAND, some gravel, some clay. (TILL)			3	50 DO	13				
2					4	50 DO	11		O	MH	Mar.23/96
3					5	50 DO	24/ .10				
				261.80 3.51							
4					6	50 DO	60/ .15				
					7	50 DO	60/ .15				
5					8	50 DO					BENTONITE GROUT
					9	50 DO	60/ .15				
6		Very dense, grey, moist to wet sandy SILT, trace to some gravel, trace to some clay, occ. thin lenses of silty fine sand. (TILL)									
7					10	50 DO	60/ .10				
					11	50 DO	50/ .15				
8					12	50 DO	60/ .15				
9					13	50 DO	60/ .15				
10		CONTINUED ON NEXT PAGE			14	50 DO	60/ .08			MH	

DEPTH SCALE 1 to 50

Golder Associates

LOGGED: TM

CHECKED: PMM

L1529491.BHS

DATA INPUT: PS JUNE 18/96

SOILM6

PROJECT: 961-1529A

RECORD OF BOREHOLE BH-49-96-1

SHEET 2 OF 3

LOCATION: SEE PLAN

BORING DATE: MARCH 19/96

DATUM: GEODETIC

SAMPLER HAMMER, 63.5kg; DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10	TRACK MOUNTED CME 75 POWER AUGER 108mm D./203mm O.D. H.S.A.	CONTINUED FROM PREVIOUS PAGE						SHEAR STRENGTH Cu, kPa; nat V - +; rem V - ⊕; Q - ●; U - ○	WATER CONTENT, PERCENT Wp, W, Wt; 5 10 15 20		
		Very dense, grey, moist to wet sandy SILT, trace to some gravel, trace to some clay, occ. thin lenses of silty fine sand. (TILL)			14	50 DO	60/ .08		○	MH	
					15	50 DO	60/ .08				
11				254.47							
		Continued on Drillhole Log		10.84							
12											
13											
14											
15											
16											
17											
18											
19											
20		CONTINUED ON NEXT PAGE									

DEPTH SCALE

1 to 50

LOGGED: TM

CHECKED: PMM

Golder Associates

L1529491.BHS

DATA INPUT: PS JUNE 18/96

SOILM6

PROJECT: 961-1529A

LOCATION: SEE PLAN

INCLINATION: -90 AZIMUTH:

RECORD OF BOREHOLE BH-49-96-1

SHEET 3 OF 3

DRILLING DATE: MARCH 19/96

DRILL RIG: CME-75

DRILLING CONTRACTOR: ALL-TERRAIN DRILLING LTD.

DATUM: GEODETIC

FR-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED
CL-CLEAVAGE J-JOINT R -ROUGH UE-UNEVEN
SH-SHEAR P-POLISHED ST-STEPPED W -WAVY
VN-VEIN S-SLICKENSIDED PL-PLANAR C -CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	RUN No.	PENETRATION RATE (m/min.)	FLUSH	COLOUR % RETURN	RECOVERY TOTAL CORE %	RECOVERY SOLID CORE %	R.Q.D. %	FRACT. INDEX PER .3 m	DISCONTINUITY DATA DIP w.r.t. CORE AXIS	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY k, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
10		CONTINUED FROM PREVIOUS PAGE															
		Continued from Borehole Log		254.43													
11				10.88										B,UE			GROUT
														Broken Core			
					1	0.06								B,UE x2			BENTONITE SEAL
12		Fresh, medium to dark grey, fine to medium grained, thinly to medium bedded nodular textured LIMESTONE and argillaceous to shaly LIMESTONE. (BEDROCK)												FR,UE B,W x2 FR,UE FR,UE x2			
														Broken Core			
														FR,UE			
13														Broken Core			
					2	0.037								FR,UE B,UE FR,UE FR,ST			
														B,UE,Muddy FR,UE,Muddy			SILICA SAND
14														FR,UE			
														B,Ground FR,UE			
					3	0.052								B,Ground B,C,Ground			
15				250.29													
		END OF DRILLHOLE		15.02													Water level in monitoring well at elevation 262.96m on on March 23,1996.
16																	
17																	
18																	
19																	
20																	

DATA INPUT: PS JUNE 18/96

DEPTH SCALE:

1 to 50

Golder Associates

LOGGED: TM

DATE: MARCH 19/96

CHECKED: PMM

PROJECT: 961-1529A

RECORD OF BOREHOLE BH-49-96-2

SHEET 1 OF 2

LOCATION: SEE PLAN

BORING DATE: MARCH 20/96

DATUM: GEODETIC

SAMPLER HAMMER, 63.5kg; DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	SHEAR STRENGTH Cu, kPa (nat V - +, rem V - ⊕, Q - ●, U - ○)	HYDRAULIC CONDUCTIVITY, k, cm/s	WATER CONTENT, PERCENT Wp — W — Wl	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	TRACK MOUNTED CME 75 POWER AUGER 108mm I.D./203mm O.D. H.S.A.	GROUND SURFACE		265.31 / 0.00									CEMENT & CASING
1													
2													Mar.23/96
3													
4													BENTONITE GROUT
5		No samples collected. Refer to BH-49-96-1 for stratigraphy.											
6													
7													
8													BENTONITE SEAL
9													
10		CONTINUED ON NEXT PAGE											SILICA SAND

DEPTH SCALE

1 to 50

Golder Associates

LOGGED: TM

CHECKED: PMM

L1528492.BHS

DATA INPUT: PS JUNE 18/96

SOILM6

PROJECT: 961-1529A

RECORD OF BOREHOLE BH-49-96-2

SHEET 2 OF 2

LOCATION: SEE PLAN

BORING DATE: MARCH 20/96

DATUM: GEODETIC

SAMPLER HAMMER, 63.5kg; DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m / SHEAR STRENGTH Cu, kPa nat V - + Q - ● rem V - ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT, PERCENT Wp W Wl	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10	TRACK MOUNTED CME 75 POWER AUGER 108mm I.D./203mm O.D. H.S.A.	CONTINUED FROM PREVIOUS PAGE									
				254.47							
11		END OF BOREHOLE		10.84							Water level in monitoring well at elevation 263.03m on March 23,1996.
12											
13											
14											
15											
16											
17											
18											
19											
20											

DEPTH SCALE

1 to 50

Golder Associates

LOGGED: TM

CHECKED: PMM

L1529492.BHS

DATA INPUT: PS JUNE 18/96

SOILM6

PROJECT: 961-1529A

RECORD OF BOREHOLE BH-49-96-3

SHEET 1 OF 1

LOCATION: SEE PLAN

BORING DATE: MARCH 20/96

DATUM: GEODETIC

SAMPLER HAMMER, 63.5kg; DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	TRACK MOUNTED CME 75 POWER AUGER 108mm I.D./203mm O.D. H.S.A.	GROUND SURFACE		265.35 0.00				SHEAR STRENGTH Cu, kPa — nat V - +, rem V - ⊕, Q - ●, U - ○	WATER CONTENT, PERCENT — Wp, W, Wl		CEMENT & CASING
1											Mar.23/96
2		No samples collected. Refer to BH-49-96-1 for stratigraphy.									BENTONITE GROUT
3											BENTONITE SEAL
4				260.78							SILICA SAND
5		END OF BOREHOLE		4.57							CAVED
6											Water level in monitoring well at elevation 264.71m on March 23,1996.
7											
8											
9											
10											

DEPTH SCALE

1 to 50

Golder Associates

LOGGED: TM

CHECKED: PMM

L1529493.BHS

DATA INPUT: PS JUNE 18/96

SOILM6

PROJECT: 881-1494

LOCATION: SEE FIGURE 2

SAMPLER HAMMER 63.5kg; DROP. 760mm

F BOREHOLE 50-98

DRILLING DATE: SEPT. 1, 1998

SHEET 1 OF 2

DATUM: GEODETIC

PENETRATION TEST HAMMER 63.5kg; DROP 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, K, cm/s	SHEAR STRENGTH Cu, kPa (nat V: + Q: ● rem V: ⊕ U: O) / WATER CONTENT PERCENT (Wp — W — Wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	CME-75 POWER AUGER BORING, HOLLOW STEM AUGERS	GROUND SURFACE		258.62								
		TOPSOIL		0.00 / 258.42								
		Loose to compact, moist, brown/ grey sandy SILT with trace to some clay and gravel. (TILL)		0.20	1	50 DO	10					
1												SEP.8/98
												BENTONITE SEAL
2				254.74 / 3.88	2	50 DO	10					
		Compact to dense, moist, brown sandy SILT to silty SAND, some gravel, trace clay. (TILL)										
3				253.57 / 3.05	3	50 DO	100					
		Very dense, moist to wet, grey sandy SILT to silty SAND, some gravel, trace clay. (TILL)										CUTTINGS
4												
5					4	50 DO	60/ 42					
				251.09 / 5.54								BENTONITE SEAL
6		LIMESTONE (BEDROCK) Interface inferred from auger resistance. For bedrock coring information, see sheet 2.										
7												
8												
9												
10												

DEPTH SCALE

1 to 50

Golder Associates

LOGGED: FSB

CHECKED: FSB

RECORD OF BOREHOLE 51-98

PROJECT: 961-1494

LOCATION: SEE FIGURE 2

SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING DATE: SEPT. 1, 1998

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

SHEET 1 OF 2

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	SHEAR STRENGTH Cu, kPa (nat V - +, rem V - ⊕, Q - ●, U - ○)	WATER CONTENT, PERCENT (Wp, W, Wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		255.69									
0	CME-75 POWER AUGER BORING HOLLOW STEM AUGERS	TOPSOIL		0.00 255.46									
				0.23	1	50 DO	14						
					2	50 DO	37						
1					3	50 DO	20						SEP.8/98
		Compact to very dense, moist, brown sandy SILT, some gravel, trace clay. (TILL)											HOLE PLUG & CUTTINGS
2													
3					4	50 DO	72						
				252.03 3.66									
4		Very dense, moist, grey sandy SILT, some gravel, trace clay. (TILL)											
5					5	50 DO	50/.17						BENTONITE SEAL
6		LIMESTONE (BEDROCK) Interface inferred from auger resistance. For bedrock coring information, see sheet 2.		249.75 5.94									
7													
8													
9													
10													

DATA INPUT: SIB MAR 5/99

DEPTH SCALE

1 to 50

Golder Associates

LOGGED: FSB

CHECKED: FSB

RECORD OF DRILLHOLE: 51-98

PROJECT 981-1494
LOCATION: SEE FIGURE 2
INCLINATION: -90 AZIMUTH:

DRILLING DATE: SEPT.2/98
DRILL RIG: CME-75 POWER AUGER
DRILLING CONTRACTOR: ALL TERRAIN DRILLING LTD.

SHEET 2 OF 2
DATUM: GEODETIC

FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN
F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED
SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR
FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED
BC-BROKEN CORE MB-MECH. BREAK B-BEDDING

DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	RUN No.	PENETRATION RATE (m/min.)	COLOUR & % RETURN	RECOVERY TOTAL CORE %	RECOVERY SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 0.3m	DISCONTINUITY DATA DIP w.r.t. CORE AXIS	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY k, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
	CONTINUED FROM SHEET 1														
	BEDROCK SURFACE		249.75									Mech. FR			
NQ	Fresh, light to medium grey, medium grained, medium to thickly bedded, stylolitic LIMESTONE with occ. slightly fossiliferous horizons. (BEDROCK)		5.94	1		FLUSH 80-100%						FR,PL,R FR,PL,R FR,PL,R FR,UE,R FR,PL,R Mech. FR FR,UE,R FR,UE,R FR,PL,R Mech. FR Mech. FR			BENTONITE SEAL SAND FILTER
SEP.2/98			247.13	2		90-100%						Mech. FR			
	END OF BOREHOLE		8.56												

1. WATER LEVEL IN MONITORING WELL AT 1.28m DEPTH (ELEV. 254.18m) ON SEPT. 3/98.
2. MONITORING WELL HAND PUMPED TO 6.90m DEPTH (ELEV. 248.79m) ON SEPT. 3/98.
3. WATER LEVEL IN MONITORING WELL AT 1.32m DEPTH (ELEV. 254.37m) ON SEPT. 4/98.
4. WATER LEVEL IN MONITORNING WELL AT 1.35m DEPTH (ELEV. 254.34m) ON SEPT. 8/98.

DATA INPUT: SIB MAR.5/99
ROCKMV5

DEPTH SCALE: 1 to 50

Golder Associates

LOGGED: FSB
DATE: SEPT.2/98
CHECKED: FSB

PROJECT: 981-1494

LOCATION: SEE FIGURE 2

INCLINATION: -90 AZIMUTH:

RECORD OF DRILLHOLE: 52-98

SHEET 2 OF 2

DRILLING DATE: SEPT.2/98

DRILL RIG: CME-75 POWER AUGER

DRILLING CONTRACTOR: ALL TERRAIN DRILLING LTD.

DATUM: GEODETIC

FR-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH IR-IRREGULAR MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No	PENETRATION RATE (m/min)	FLUSH COLOUR % RETURN	RECOVERY TOTAL CORE %	RECOVERY SOLID CORE %	R.Q.D %	FRACT INDEX PER 0.3m RUN	DISCONTINUITY DATA SPACING CORE AXIS	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY k, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVEL INSTRUMENTATION
4		CONTINUED FROM SHEET 1														
		BEDROCK SURFACE		248.54												
5	NQ	Fresh, light to medium grey, medium grained, medium to thickly bedded, stylolitic LIMESTONE with occ. slightly fossiliferous horizons. (BEDROCK)		4.72	1	0.076	90-100%						Mech. FR BROKEN CORE FR,UE,R FR,UE,R BROKEN CORE FR,UE,R			BENTONITE SEAL
6					2	0.068	90-100%						FR,PL,R FR,PL,R FR,PL,R FR,PL,R FR,PL,R FR,PL,R FR,PL,R FR,PL,R			SAND FILTER
7	SEP 2/98			245.87									Mech. FR			
		END OF BOREHOLE		7.34												
8																1. WATER LEVEL MEASURED IN MONITORING WELL AT 0.35m DEPTH (ELEV. 252.86m ON SEPT. 3/98.
9																2. MONITORING WELL HAND PUMPED TO 4.50m DEPTH (ELEV. 248.71m) ON SEPT. 3/98.
10																3. WATER LEVEL MEASURED IN MONITORING WELL AT 0.28m DEPTH (ELEV. 252.93m) ON SEPT. 4/98.
11																4. WATER LEVEL MEASURED IN MONITORING WELL AT 0.30m DEPTH (ELEV. 252.91m) ON SEPT. 8/98.
12																
13																
14																

DEPTH SCALE:

1 to 50

Golder Associates

LOGGED: DKB

DATE: SEPT.2/98

CHECKED: FSB

PROJECT: 931-1494

RECORD OF BOREHOLE 53-98

SHEET 1 OF 2

LOCATION: SEE FIGURE 2

BORING DATE: SEPT. 2-3, 1998

DATUM: GEODETIC

SAMPLER HAMMER, 63.5kg; DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	SHEAR STRENGTH Cu, kPa (nat V: + Q: ●; rem V: ⊕ U: ○)	WATER CONTENT, PERCENT (Wp, W, Wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	CME-75 POWER AUGER BORING 203mm DIA HOLLOW STEM AUGERS	GROUND SURFACE		256.49									
		TOPSOIL		0.20 256.29									
		Firm, moist, dark brown SILTY CLAY, trace sand, gravel and organics (roots).		0.20	1	SS	8						
1													
		NOTE: Artifically high 'N' value for sample 2 probably due to gravel/ cobble pieces in spoon.			2	SS	41				Sa 2 Gravel = 3% Sand = 29% Silt = 47% Clay = 21%		
2				254.05									SEP.8/98
		Compact, moist, brown sandy SILT, trace to some clay, trace gravel. (TILL)		2.44	3	SS	46/ 28						
3													
		NOTE: Artifically high 'N' value for sample 3 probably due to gravel/ cobble pieces in spoon.											BENTONITE GROUT
4				252.05									
				4.44	4	SS	40						
5													
6		Dense to very dense, wet, grey sandy SILT, trace to some clay and gravel. (TILL)			5	SS	50/ 17						
7													
					6	SS	50/ 17						
8				248.52									
		LIMESTONE (BEDROCK) Interface inferred from auger resistance. For bedrock coring information, see sheet 2.		7.97									
9													
10													

DEPTH SCALE

1 to 50

Golder Associates

LOGGED: DKB

CHECKED: FSB

SOILM6

PROJECT 981-1494

LOCATION: SEE FIGURE 2

INCLINATION: -90 AZIMUTH:

RECORD OF DRILLHC ... 53-98

DRILLING DATE: SEPT.3/98

DRILL RIG: CME-75 POWER AUGER

DRILLING CONTRACTOR: ALL TERRAIN DRILLING LTD.

SHEET 2 OF 2

DATUM: GEODETIC

FR-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV / DEPTH (m)	RUN No	PENETRATION RATE (min/m)	FLUSH / COLOUR & RETURN	RECOVERY TOTAL CORE %	RECOVERY SOLID CORE %	R.Q.D. %	FRACT INDEX PER 0.3m	DISCONTINUITY DATA DIP w.r.t. CORE AXIS	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVEL INSTRUMENTATION
7		CONTINUED FROM SHEET 1														
		BEDROCK SURFACE		248.52									Mech. FR			
8	NQ	Fresh, light to medium grey, medium grained, medium to thickly bedded, stylolitic LIMESTONE with occ. slightly fossiliferous horizons and dolomitic nodules. (BEDROCK)		8.37	1	0.103	80-100%						BROKEN CORE 8.00-8.20m FR,UE,R FR,PL,R FR,UE,R FR,PL,R FR,UE,R BROKEN CORE 9.48-9.51m FR,UE,R FR,UE,R FR,UE,R FR,PL,R Mech. FR			BENTONITE SEAL SAND FILTER
9																
10	SEP 3/98			245.90												
		END OF BOREHOLE		10.59												
11																1. WATER LEVEL IN MONITORING WELL MEASURED AT 2.11m DEPTH (ELEV. 254.38m) ON SEPT. 3/98.
12																2. MONITORING WELL HAND PUMPED TO 7.25m DEPTH (ELEV. 249.24m) ON SEPT. 3/98.
13																3. WATER LEVEL IN MONITORING WELL MEASURED AT 2.13m DEPTH (ELEV. 254.36m) ON SEPT. 4/98.
14																4. WATER LEVEL IN MONITORING WELL MEASURED AT 2.21m DEPTH (ELEV. 254.28m) ON SEPT. 8/98.
15																
16																
17																

DEPTH SCALE:

1 to 50

Golder Associates

LOGGED: DKB

DATE: SEPT.3/98

CHECKED: FSB

PROJECT: 581-1494

RECORD OF BOREHOLE 54-98

SHEET 1 OF 3

LOCATION: SEE FIGURE 2

BORING DATE: SEPT. 8, 1998

DATUM: GEODETIC

SAMPLER HAMMER, 63.5kg; DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, K, cm/s	ADDITIONAL LAB TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		259.70				SHEAR STRENGTH Cu, kPa: nat V - + Q - ● ; rem V - ⊕ U - O	WATER CONTENT, PERCENT: Wp, W, Wl (5, 10, 15, 20)		
		TOPSOIL		0.20 / 259.50							
1	CME-75 POWER AUGER BORING 203mm DIA HOLLOW STEM AUGERS	Compact, moist, brown to mottled brown and grey sandy SILT, some clay and gravel. (TILL)			1	SS	10				
					2	SS	15		Sa.2 Gravel = 8% Sand = 43% Silt = 37% Clay = 12%		BENTONITE GROUT
3					3	SS	22				SEP.8/98
				255.89 / 3.81							
4					4	SS	50/.17				
5		Very dense, moist, grey sandy SILT, trace to some clay and gravel. (TILL)			5	SS	50/.50				
7					6	SS	50/.17				
8				251.47 / 8.23							
		Very dense, wet, grey sandy GRAVEL, trace to some silt.			7	SS	50/.33				
9		Cobble/boulder @ 9.09m depth.									
10				249.70 / 10.00							

DEPTH SCALE

1 to 50

Golder Associates

LOGGED: DKB

CHECKED: FSB

DATA: SIB MAR 5/99

LOG: LOILM6

PROJECT: 981-1494

RECORD OF BOREHOLE 54-98

SHEET 2 OF 3

LOCATION SEE FIGURE 2

BORING DATE: SEPT. 8, 1998

DATUM: GEODETIC

SAMPLER HAMMER, 63.5kg; DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY K, cm/s	SHEAR STRENGTH Cu, kPa (nat V - +, Q - ●; rem V - ⊕, U - O)	WATER CONTENT PERCENT (Wp, W, Wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10	CME 75 HSA			249.70 10.00									
				249.03 10.67									
11		LIMESTONE (BEDROCK) Interface inferred from auger resistance. For bedrock coring information, see sheet 3.											
12													
13													
14													
15													
16													
17													
18													
19													
20													

DATA INPUT SIB MAR 5/99

SOILM6

DEPTH SCALE
1 to 50

Golder Associates

LOGGED: DKB

CHECKED: FSB

PROJECT: 981-1494

LOCATION: SEE FIGURE 2

INCLINATION: -90 AZIMUTH:

RECORD OF DRILLHOLE: 54-98

DRILLING DATE: SEPT.8/98

DRILL RIG: CME-75 POWER AUGER

DRILLING CONTRACTOR: ALL TERRAIN DRILLING LTD.

SHEET 3 OF 3

DATUM: GEODETIC

FR-FRACTURE, CL-CLEAVAGE, SH-SHEAR, VN-VEIN, F-FAULT, J-JOINT, P-POLISHED, S-SLICKENSIDED, SM-SMOOTH, R-ROUGH, ST-STEPPED, PL-PLANAR, FL-FLEXURED, UE-UNEVEN, W-WAVY, C-CURVED, BC-BROKEN CORE, MB-MECH BREAK, B-BEDDING

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH COLOUR % RETURN	RECOVERY TOTAL CORE %	RECOVERY SOLID CORE %	R.Q.D. %	FRACT INDEX PER 0.3m	DISCONTINUITY DATA DP w/t CORE AXIS	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
10		CONTINUED FROM SHEET 2														
		BEDROCK SURFACE		249.03 / 10.67												
11	NQ	Fresh to weathered, medium grey, fine to medium grained, laminated to thinly bedded, fossiliferous, nodular LIMESTONE with occ. shale partings. (BEDROCK)			1	0.051	90-100%						BROKEN CORE 10.67-11.84m			BENTONITE GROUT; BENTONITE SEAL
12					2	0.019	90-100%						Mech. FR; FR,UE,R; FR,UE,R; FR,UE,R; FR,UE,R			SAND FILTER
					3	0.009	90-100%						FR,PL,R; FR,PL,R; FR,UE,R; FR,PL,R; Mech. FR			
13	SEP.8/98			246.31 / 13.39	4	0.024	90-100%						BROKEN CORE 12.80-12.95m; FR,UE,R; Mech. FR; FR,PL,R; FR,UE,R; FR,UE,R; Mech. FR			
		END OF BOREHOLE														
14																1. WATER LEVEL MONITORING MEASURED AT 3.21m DEPTH (ELEV. 256.49m) ON SEPT. 8/98.
15																2. MONITORING WELL HAND PUMPED TO 6.85m DEPTH (ELEV. 252.85m) ON SEPT. 8/98.
16																
17																
18																
19																
20																

DEPTH SCALE: 1 to 50

Golder Associates

LOGGED: DKB

DATE: SEPT.8/98

CHECKED: FSB

N1494054.BBB
DATA: SIB MAR 5/99
ROCKMV5

PROJECT: 981-1494

RECORD OF DRILLHOLE: 55-98-1

SHEET 1 OF 2

LOCATION: SEE FIGURE 2

DRILLING DATE: SEPT.4/98

DATUM: GEODETIC

INCLINATION: -90 AZIMUTH:

DRILL RIG: CME-75 POWER AUGER

DRILLING CONTRACTOR: ALL TERRAIN DRILLING LTD.

FR-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R -ROUGH UE-UNEVEN MB-MECH BREAK
SH-SHEAR P-POLISHED ST-STEPPED W -WAVY B -BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C -CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	RUN No	PENETRATION RATE (m/min)	COLOUR & RETURN FLUSH	RECOVERY: TOTAL CORE %	RECOVERY: SOLID CORE %	R.Q.D. %	FRACT INDEX PER 0.3m	DISCONTINUITY DATA: DIP w.r.t. CORE AXIS	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
0				265.64												
				0.00												
1																
2																
3																
4																SEP.8/98
5		UNSAMPLED OVERBURDEN														BENTONITE GROUT
6																
7																
8																
9																
10		CONTINUED ON NEXT PAGE														

DEPTH SCALE:
1 to 50

Golder Associates

LOGGED: DKB
DATE: SEPT.4/98
CHECKED: FSB

DATA INPUT: SIB MAR 5/99

PROJECT: 981-1494

RECORD OF DRILLHOLE: 55-98-1

SHEET 2 OF 2

LOCATION: SEE FIGURE 2

DRILLING DATE: SEPT.4/98

DATUM: GEODETIC

INCLINATION: -90 AZIMUTH:

DRILL RIG: CME-75 POWER AUGER

DRILLING CONTRACTOR: ALL TERRAIN DRILLING LTD.

FR-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH JE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV / DEPTH m	RUN No.	PENETRATION RATE (m/min)	COLOUR & RETURN FLUSH	RECOVERY TOTAL CORE %	RECOVERY SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 0.3m	DISCONTINUITY DATA DIP w.r.t. CORE AXIS	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
10		CONTINUED FROM PREVIOUS PAGE														
11		BEDROCK SURFACE INFERRED FROM AUGER RESISTANCE		254.41												
12	SEP 4/98 NO	Fresh to weathered, medium grey, fine to medium grained, laminated to medium bedded, fossiliferous, nodular LIMESTONE with occ. shale partings. (BEDROCK)		11.23	1	0.056							Mech. FR FR,UE,R FR,UE,R FR,UE,R FR,UE,R FR,UE,R FR,UE,R FR,UE,R FR,UE,R Mech. FR FR,UE,R FR,UE,R FR,UE,R FR,PL,R FR,UE,R Mech. FR			BENTONITE GROUT BENTONITE SEAL SAND FILTER
13				252.28	2	0.142										
		END OF BOREHOLE		13.36												
14																1. WATER LEVEL MONITORING MEASURED AT 3.22m DEPTH (ELEV. 262.42m) ON SEPT. 4/98.
15																2. MONITORING WELL HAND PUMPED TO 8.47m DEPTH (ELEV. 257.17m) ON SEPT. 4/98.
16																3. WATER LEVEL IN MONITORING WELL MEASURED AT 3.66m DEPTH (ELEV. 261.98m) ON SEPT. 8/98.
17																
18																
19																
20																

DEPTH SCALE:
1 to 50

Golder Associates

LOGGED: DKB
DATE: SEPT.4/98
CHECKED: FSB

PROJECT: 981-1494

RECORD OF DRILLHOLE: 55-98-2

SHEET 2 OF 2

LOCATION: SEE FIGURE 2

DRILLING DATE: SEPT.3/98

DATUM: GEODETIC

INCLINATION: -90 AZIMUTH:

DRILL RIG: CME-75 POWER AUGER

DRILLING CONTRACTOR: ALL TERRAIN DRILLING LTD.

FR-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	COLOUR % RETURN	RECOVERY TOTAL CORE %	RECOVERY SOLID CORE %	R.Q.D. %	FRACT INDEX PER 0.3m	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY k, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
10		CONTINUED FROM PREVIOUS PAGE													BENTONITE GROUT
		BEDROCK SURFACE		254.82											
11				10.82								FR,UE,R			
					1	0.070	90-100%					FR,UE,R			
12												FR,PL,R			
												FR,UE,R			
13		Fresh to weathered, medium grey, fine to medium grained, laminated to medium bedded, fossiliferous, nodular LIMESTONE with occ. shale partings. (BEDROCK)										FR,PL,R			BENTONITE SEAL
												FR,PL,R			
14					2	0.051	90-100%					FR,PL,R			
												FR,PL,R			
15	NQ RC											FR,PL,R			
												FR,PL,R			
												FR,PL,R			
16												FR,UE,R			
												FR,UE,R			
												FR,PL,R			
17					3		90-100%					FR,PL,R			SAND FILTER
												Mech. FR			
												FR,UE,R			
				247.94								FR,UE,R			
18	SEP 3/98	Fresh, light to medium grey, medium grained, medium to thickly bedded, stylolitic LIMESTONE with occ. slightly fossiliferous horizons. (BEDROCK)		17.70								FR,UE,R			
				247.00								FR,UE,R			
		END OF BOREHOLE		18.64								Mech. FR			
19															
20															

1. WATER LEVEL IN MONITORING WELL MEASURED AT 4.04m DEPTH (ELEV. 261.60m) ON SEPT. 4/98.
2. MONITORING WELL HAND PUMPED TO 10.42m DEPTH (ELEV. 255.22m) ON SEPT. 4/98.
3. WATER LEVEL IN MONITORING WELL MEASURED AT 9.32m DEPTH (ELEV. 256.32m) ON SEPT. 8/98.

DEPTH SCALE: 1 to 50

LOGGED: DKB

DATE: SEPT.3/98

CHECKED: SSB

Golder Associates

DATA IN SIB MAR 5/99 XCRMV5

PROJECT: 981-1494

RECORD OF DRILLHOLE: 55-98-2

SHEET 1 OF 2

LOCATION: SEE FIGURE 2

DRILLING DATE: SEPT.3/98

DATUM: GEODETIC

INCLINATION: -90 AZIMUTH:

DRILL RIG: CME-75 POWER AUGER

DRILLING CONTRACTOR: ALL TERRAIN DRILLING LTD.

FR-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH / COLOUR / % RETURN	RECOVERY: TOTAL CORE %	RECOVERY: SOLID CORE %	R.Q.D. %	FRACT INDEX PER 0.3m	DISCONTINUITY DATA: ANGLE TO CORE AXIS	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY k, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES: WATER LEVEL / INSTRUMENTATION
0				265.64												
				0.00												
1																
2																
3																
4																
5		UNSAMPLED OVERBURDEN														BENTONITE GROUT
6																
7																
8																
9																SEP.8/98
10		CONTINUED ON NEXT PAGE														

DEPTH SCALE:
1 to 50

Golder Associates

LOGGED: DKB
DATE: SEPT.3/98
CHECKED: FSB

DATA INPUT: SIB MAR 5/99

PROJECT: 021-1306

RECORD OF BOREHOLE: 56-02-I

SHEET 1 OF 1

LOCATION: Refer to Plan

BORING DATE: Jan.29-30, 2002

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	CME 75 Bombardier, 108mm Hollow Stem Augers	GROUND SURFACE		263.60							
		TOPSOIL		0.00 / 263.14							BACKFILL; CONCRETE
		Stiff, brown sandy SILT, trace to some clay, trace to some gravel. (TILL)		0.46 / 262.38	1	50 DO	12				BENTONITE SEAL
1		Dense, brown SAND and GRAVEL, some silt, trace clay. (TILL)		1.22 / 261.16	2	50 DO	44				
2		Very dense, brown to grey silty SAND to sandy SILT, trace to some gravel and clay, occasional cobbles/boulders. (TILL)		2.44	3	50 DO	87				
3											
4					4	50 DO	56/.15				
5											BENSEAL GROUT
6					5	50 DO	60/.15				
7					6	50 DO	80/.15				
8											
9					7	50 DO	70/.15				BENTONITE SEAL
		Probable top of bedrock		253.85							
10		Continued on drillhole log.		9.75							

MIS-BHS 001 021-1306.GPJ GAL-MISS.GDT 4/24/07 PS

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: DKB
CHECKED: FB

PROJECT: 021-1306

RECORD OF BOREHOLE: 56-02-II

SHEET 1 OF 1

LOCATION: Refer to Plan

BORING DATE: Jan.29,2002

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		263.61							
0	CME 75 Bombardier 108mm Hollow Stem Augers	TOPSOIL		0.00 / 263.15							BACKFILL; CONCRETE
		Very stiff, mottled, brown sandy SILT, trace to some clay, trace gravel. (TILL)		0.46 / 262.39	1	50 DO	15				BENTONITE SEAL
1		Very dense, brown SAND and GRAVEL, some silt, trace clay, occ. cobbles/boulders below 2.4m depth. (TILL)		1.22	2	50 DO	50				BENSEAL GROUT
2											
3					3	50 DO	76				BENTONITE SEAL
4		Very dense, grey silty SAND to sandy SILT, trace gravel and clay, occ. cobbles/boulders. (TILL)		3.96 / 259.65	4	50 DO	50/ .08				#1 SILICA SAND
5											WELL SCREEN 50mm Dia. Sch. 40 PVC #10 slot; 3.0m screen length
6					5	50 DO	50/ .08				
		END OF BOREHOLE Approximate depth to groundwater table = 0.27m (Feb.11/02)		6.32 / 257.29							Top of Pipe Elev. = 264.46m Stick-up = 0.85m
7											
8											
9											
10											

DEPTH SCALE
1 : 50

Golder Associates

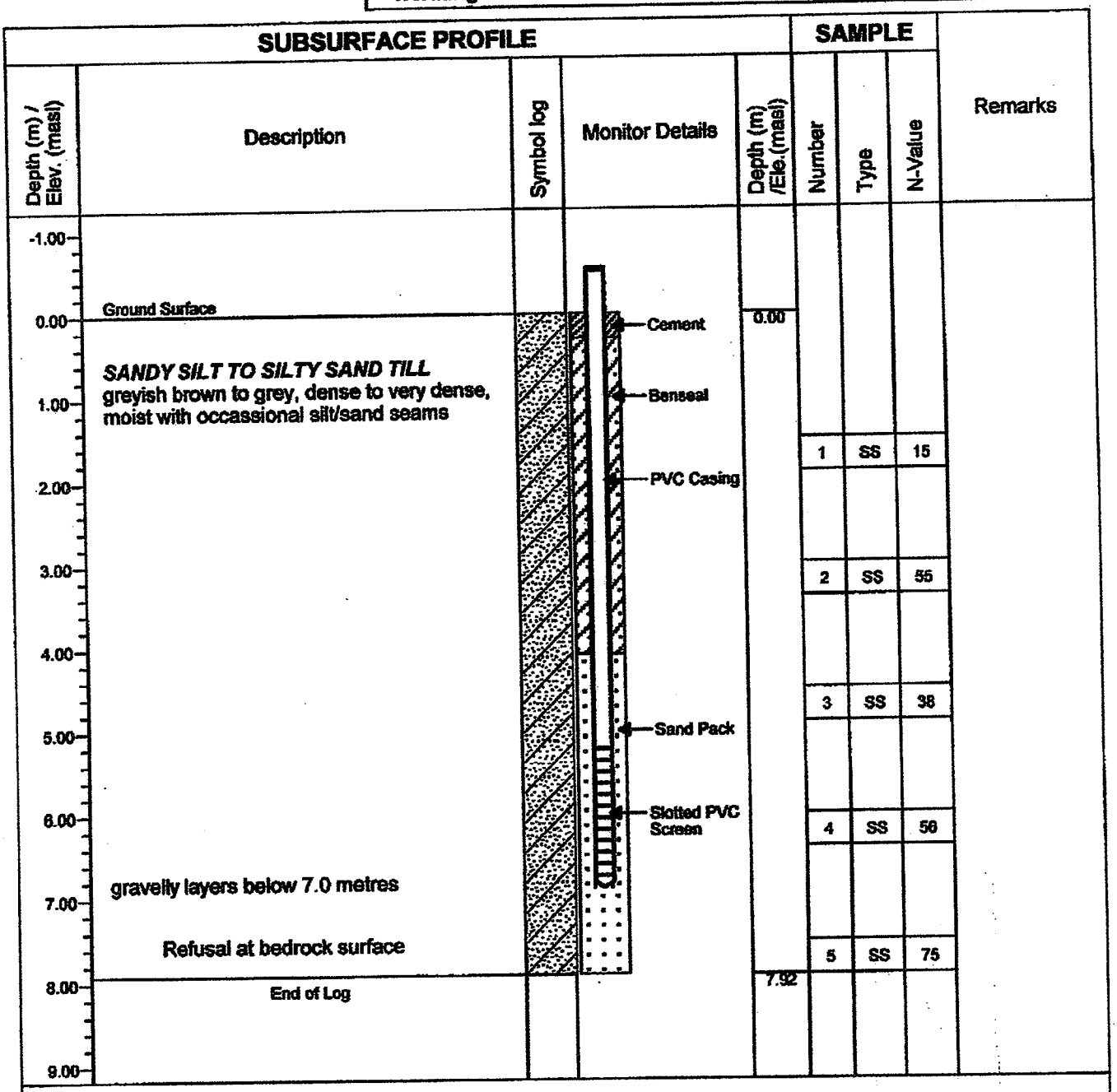
LOGGED: DKB
CHECKED: FB

MIS-BHS 001 021-1306.GPJ GAL-MISS.GDT 4/24/07 PS

HYDROTERRA LIMITED
15 Glamis Place, Thornhill, ON L3T 3G7

Log of Borehole: 59-05

Project Name: Lindsay Lagoon
Project No.: 1440
Client: Kawartha Lakes
Date: June 21, 2005
Borehole Type: Soil Auger
Hole Diameter: 110 mm
Ground Elevation: -
Engineer: LB
Northing: -
Easting: -



Sheet: 1 of 1

HYDROTERRA LIMITED
15 Glamis Place, Thornhill, ON L3T 3G7

Log of Borehole: 60-05

Project Name: Lindsay Lagoon
Project No.: 1440
Client: Kawartha Lakes
Date: June 22, 2005
Borehole Type: Soil Auger
Hole Diameter: 110 mm
Ground Elevation: -
Engineer: LB
Northing: -
Easting: -

SUBSURFACE PROFILE

Depth (m) / Elev. (masl)	Description	Symbol log	Monitor Details	Depth (m) /Ele.(masl)
-1.00				
0.00	Ground Surface			0.00
	SANDY SILT TO SILTY SAND TILL greyish brown to grey, dense to very dense, moist with occasional silt/sand seams, boulders near bedrock surface		Cement Benseal PVC Casing Sand Pack Slotted PVC Screen	
1.00				
2.00				
3.00				
4.00				
5.00				
6.00				
7.00				
8.00				
	LIMESTONE grey			8.50
9.00	End of Log			9.14
10.00				

SAMPLE

Number	Type	N-Value	Remarks
1	SS	32	
2	SS	40	
3	SS	27	
4	SS	91	
5	SS	96	

Memorandum

To: Mr. Dennis Hamilton

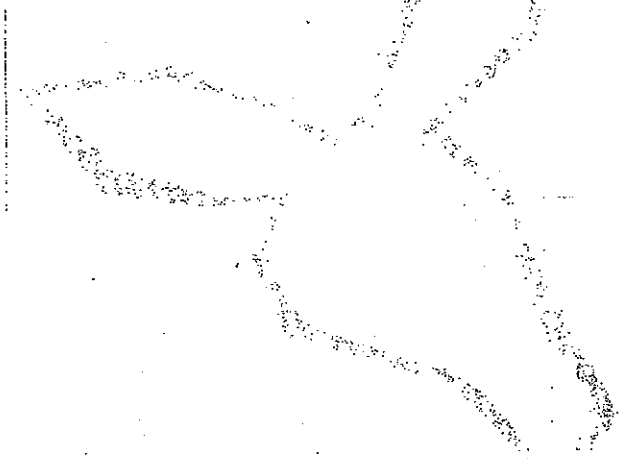
From: Darren Juneau

Date: 3/27/2008

Re: Replacement of Monitoring Well on top of Lindsay OPS Landfill

---

- On December 11, 2007 we overdrilled monitoring well inside of 6" steel casing to 37' below ground surface with 6" solid stem augers through refuse. Hit methane pocket and let vent to the atmosphere for two hours at which point we then left for the night as it was apparent it would not abate that day.
- Aardvark Drilling Inc. returned to site December 12, 2007 with only slight methane venting remaining; pulled solid stem augers out to surface. Methane flow stopped when all augers were out of the ground.
- hole remained open to 32' below ground surface
- installed 2" PVC sch 40 triloc well casing and 10' x 2" PVC triloc #10 slot screen to a total depth of 35' below ground surface
- methane began to vent through the 2" PVC pipe and continued to vent during installation
- Slotted 2" cap was placed on top of casing to mitigate but not prevent methane flow
- Aluminum locking cover was placed on top of 6" steel casing



Aardvark Drilling Inc. 25 Lewis Road, Unit C, Guelph, ON N1H 1E9 Phone: 519.826.9340 Fax: 519.826.9108 MOE# 7238

The Corporation of the City of Kawartha Lakes

Engineering and Public Works
Environmental Services Division

MEMORANDUM

TO: **Bill Pickard, Manager of Solid Waste**

FROM: **Dennis Hamilton, Environmental Services Technician**

DATE: **January 15, 2007**

SUBJECT: **Re: Lindsay/Ops well 7-90, re-drilling December 11, 2007**

The City of Kawartha Lakes hired Aardvark Drilling Inc., Guelph, Ontario to drill new wells and decommission others as was required.

Well 7-90 at the closed Lindsay/Ops landfill has not worked for some time and attempts to repair it in August, 2007 were unsuccessful.

This well has been blocked for some time and attempts to take a water or methane sample from this well have been unsuccessful.

The drilling contractor was consulted to establish the best way to deal with this well. It was decided to re-drill this well and to try and re-establish it as a functional water sampling location.

When the drillers removed the 2" PVC pipe from inside the 6" steel casing it was discovered that it was blocked at about 20 feet as shown in figures A and B.

When re-drilling this well, the driller's encountered refuse and interim clay cover materials to a depth of 25 feet.

The drill augers proceeded to drill to a depth of 33 feet where a large pocket of methane gas was encountered.

The pressure of the methane forced a black liquid sludge material upward and out the top of the steel casing as shown in figures C. and D.

The drillers advanced the drill augers about 3 more feet and considerable methane was escaping from the top of the steel casing between the drill auger and the casing.

A Dragger Pac 2 methane meter registered 48% by volume of methane escaping from the top of the casing and the drilling was stopped.

This is above the lower explosive limit for methane gas. (5%)
A noticeable (hissing) of escaping gas was observed and it was decided to leave the augers in the casing until the next day to see if the escaping gas volumes diminished.

The following day the gas volume had not ceased and it was decided to carefully remove the augers and to install and new 2", five foot PVC screen and piping which would re-establish a sampling source for this well.

This installation was successful without incident and samples will be taken from this well when required.

A subsequent visit to well 7-90 January 14, indicated that the volume of methane from this well was 47% by volume.

The water level in this well was just slightly below the top of the steel casing, three feet above ground level and gas bubbles were observed coming out of the water.

It would appear that gas pressure at this well is forcing water up into the steel casing. Further observations will be required.

Dennis Hamilton
Environmental Services Technician

c.c: Roberta Perdue, Regulatory Compliance Officer

DAILY SUMMARY

ALL-TERRAIN

7-98-11 installation

DRILLING CONTRACTORS

3-661 COLBY DR., WATERLOO, ONT. N2V 1C2 519-886-8810

CLIENT: KAWARTHA LAKES
JOB LOCATION: LINDSAY OPS LANDFILL
DRILLER: DON

DATE: DEC 12/2000
JOB NO.:
CLIENT NO.:

FOOTAGE

BOREHOLE	DEPTH FROM	DEPTH TO	AUGER & SAMPLE	AUGER	CORE	ROTARY	CASED	EASTING	NORTHING
	0	47'		47'					
TOTALS									

HOURLY CHARGES

BOREHOLE	HOURS FROM	HOURS TO	HOURS	DESCRIPTION OF WORK
	8.30	9.30		MOVE TO SITE
	12.30	5.30	5	DRILL/INSTALL LEACHATE WELL TO 47'
				8-SAND
TOTALS				

CHARGEABLE EXPENSES

SCREEN	1 X10	BENSEAL	3 B.S.G.
SCREEN		BENSEAL GROUT	
RISER	4 X10	SAKCRETE	
END CAPS	2	PRO CASING	1
J. PLUG		F.M. CASING	
HOLE PLUG	4	CORE TRAYS	

MILEAGE

MOBILIZATION POINT
ONE WAY MILEAGE X2= MILES
ON-SITE MILEAGE

CLIENT'S REPRESENTATIVE
FOR CONTRACTOR

NOTE: THE INVOICE WILL BE PREPARED FROM THIS SUMMARY. THE CLIENTS REPRESENTATIVE WILL BE GIVEN A COPY AND THIS SIGNATURE IS BINDING

PROJECT: 021-1306

RECORD OF BOREHOLE: GP-1

SHEET 1 OF 1

LOCATION: Refer to Plan

BORING DATE: Feb.1,2002

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		GROUND SURFACE		258.79							
	CME 75 Bombardier / 108mm Hollow Stem Augers	TOPSOIL		0.00 258.33							BACKFILL
		Very stiff to hard, mottled brown to brown sandy SILT, some clay, trace to some gravel, occ. cobbles/boulders below 3m depth. (TILL)		0.46	1	50 DO	20				CONCRETE
1											BENTONITE SEAL
					2	50 DO	16				
2											
											#3 SILICA SAND
3					3	50 DO	37				WELL SCREEN 50mm Dia. Sch. 40 PVC #50 slot 2.6m screen length
				255.13							
		Compact, grey silty SAND to sandy SILT, occ. silty clay seams/layers (2mm-5mm thick).		3.66							
4					4	50 DO	29				
				254.37							
		END OF BOREHOLE		4.42							Top of Pipe Elev. = 259.80m
		Approximate depth to groundwater table = 2.4m (Feb.11/02)									Stick-up = 1.0m
5											
6											
7											
8											
9											
10											

MIS-BHS 001 021-1306.GPJ GAL-MISS.GDT 4/24/07 PS

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DKB

CHECKED: FB

PROJECT: 021-1306

RECORD OF BOREHOLE: GP-2

SHEET 1 OF 1

LOCATION: Refer to Plan

BORING DATE: Feb.1,2002

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		259.08							
0	CME 75 Bombardier 108mm Hollow Stem Augers	TOPSOIL		0.00 / 258.78							BACKFILL
		Firm to stiff, mottled brown to brown CLAYEY SILT, some sand, trace gravel, occ. rootlets from 0.3m to 1.1m. (TILL)		0.30	1	50 DO	6				CONCRETE
1											BENTONITE SEAL
					2	50 DO	15				
2											
				256.49							
		Very dense, grey sandy SILT to silty SAND, trace to some clay and gravel, occ. cobbles/boulders. (TILL)		2.59							#3 SILICA SAND
3					3	50 DO	79				WELL SCREEN 50mm Dia. Sch. 40 PVC #50 slot 2.6m screen length
4					4	50 DO	87/ .22				
				254.74							
		END OF BOREHOLE		4.34							
		Approximate depth to groundwater table = 0.11m (Feb.11/02)									Top of Pipe Elev. = 259.90m
5											Stick-up = 0.82m
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DKB

CHECKED: FB

MIS-BHS 001 021-1306.GPJ GAL-MISS.GDT 4/24/07 PS

PROJECT: 021-1306

RECORD OF BOREHOLE: GP-3

SHEET 1 OF 1

LOCATION: Refer to Plan

BORING DATE: Feb.1,2002

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		264.31							
0	CME 75 Bombardier 108mm Hollow Stem Augers	TOPSOIL		0.00 / 264.01							BACKFILL
		Stiff to very stiff, brown sandy SILT, some clay, trace to some gravel. (TILL)		0.30	1	50 DO	9				CONCRETE
1											BENTONITE SEAL
					2	50 DO	18				
2				261.87							
		Very dense, grey sandy SILT to silty SAND, some clay and gravel, occ. cobbles and boulders. (TILL)		2.44							#3 SILICA SAND
3					3	50 DO	61				WELL SCREEN 50mm Dia. Sch. 40 PVC #50 slot 2.6m screen length
4				260.04	4	50 DO	55/ .15				
		END OF BOREHOLE		4.27							Top of Pipe Elev. = 265.21m
		Approximate depth to groundwater table = 0.54m (Feb.11/02)									Stick-up = 0.90m
5											
6											
7											
8											
9											
10											

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: DKB
CHECKED: FB

MIS-BHS 001 021-1306.GPJ GAL-MISS.GDT 4/24/07 PS

PROJECT: 021-1306

RECORD OF BOREHOLE: GP-4

SHEET 1 OF 1

LOCATION: Refer to Plan

BORING DATE: Jan.31,2002

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		GROUND SURFACE		266.88							
	CME 75 Bombardier 108mm Hollow Stem Augers	TOPSOIL		0.00 / 266.58							BACKFILL; CONCRETE; BENTONITE SEAL
		Stiff, brown sandy SILT, some clay, trace to some gravel. (TILL)		0.30	1	50 DO	12				
1											
					2	50 DO	10				
2											#3 SILICA SAND
				264.14							
		Dense, grey sandy SILT to silty SAND, trace to some gravel and clay, occ. cobbles/boulders. (TILL)		2.74							WELL SCREEN 50mm Dia. Sch. 40 PVC #50 slot; 3.0m screen length
3					3	50 DO	37				
4					4	50 DO					
				262.46							
		END OF BOREHOLE		4.42							Top of Pipe Elev. = 267.74m
		Approximate depth to groundwater table = 0.78m (Feb.11/02)									Stick-up = 0.86m
5											
6											
7											
8											
9											
10											

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: DKB

CHECKED: FB

MIS-BHS 001 021-1306.GPJ GAL-MISS.GDT 4/24/07 PS

PROJECT: 021-1306

RECORD OF BOREHOLE: GP-5

SHEET 1 OF 1

LOCATION: Refer to Plan

BORING DATE: Jan.31,2002

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	CME 75 Bombardier 108mm Hollow Stem Augers	GROUND SURFACE		262.57							
		TOPSOIL		0.00 / 262.27							BACKFILL
		Firm to stiff, mottled brown to brown sandy SILT, some clay, trace to some gravel. (TILL)		0.30	1	50 DO	8				CONCRETE
1											BENTONITE SEAL
2					2	50 DO	11				
				259.83							#3 SILICA SAND
		Dense to very dense, grey silty SAND to sandy SILT, trace to some gravel and clay, occ. cobbles/boulders. (TILL)		2.74							WELL SCREEN 50mm Dia. Sch. 40 PVC #50 slot 3.0m screen length
3					3	50 DO	47				
4				258.23	4	50 DO	60/ .08				
		END OF BOREHOLE		4.34							Top of Pipe Elev. = 263.47m
		Approximate depth to groundwater table = 0.42m (Feb.11/02)									Stick-up = 0.90m
5											
6											
7											
8											
9											
10											

MIS-BHS 001 021-1306.GPJ GAL-MISS.GDT 4/24/07 PS

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DKB

CHECKED: FB

PROJECT: 021-1306

RECORD OF BOREHOLE: GP-6

SHEET 1 OF 1

LOCATION: Refer to Plan

BORING DATE: Jan.31,2002

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	CME 75 Bombardier 108mm Hollow Stem Augers	GROUND SURFACE		265.65							
		TOPSOIL		0.00 / 265.35							BACKFILL
		Stiff, brown sandy SILT, some to trace clay, trace to some gravel. (TILL)		0.30	1	50 DO	9				CONCRETE
1											BENTONITE SEAL
					2	50 DO	12				
2				263.52							
		Very dense, brown to grey sandy SILT to silty SAND, trace to some gravel and clay. (TILL)		2.13							#3 SILICA SAND
3					3	50 DO	50/ .15				WELL SCREEN 50mm Dia. Sch. 40 PVC #50 slot 3.0m screen length
4				261.23	4	50 DO	60/ .15				
		END OF BOREHOLE		4.42							Top of Pipe Elev. = 266.56m
		Approximate depth to groundwater table = 0.75m (Feb.11/02)									Stick-up = 0.91m
5											
6											
7											
8											
9											
10											

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: DKB
CHECKED: FB

MIS-BHS 001 021-1306.GPJ GAL-MISS.GDT 4/24/07 PS

PROJECT: 021-1306

RECORD OF BOREHOLE: GP-7

SHEET 1 OF 1

LOCATION: Refer to Plan

BORING DATE: Jan.31,2002

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		GROUND SURFACE		263.26							
	CME 75 Bombardier 108mm Hollow Stem Augers	TOPSOIL		0.00 262.96							BACKFILL CONCRETE
1		Loose, brown silty sand, trace to some gravel, trace clay, occ. topsoil layers. (FILL)		0.30 262.04	1	50 DO	6				BENTONITE SEAL
2		Compact, brown silty SAND to sandy SILT.		1.22 260.52	2	50 DO	20				SILICA SAND WELL SCREEN 50mm Dia. Sch. 40 PVC #50 slot 1.5m screen length
3		Very dense, brown sandy SILT to silty SAND, trace to some gravel and clay, occasional cobbles/boulders. (TILL)		2.74 259.91	3	50 DO	50/.25				
		END OF BOREHOLE Approximate depth to groundwater table = 0.76m (Feb.11/02)		3.35							Top of Pipe Elev. = 264.16m Stick-up = 0.90m
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: DKB
CHECKED: FB

MIS-BHS 001 021-1306.GPJ GAL-MISS.GDT 4/24/07 PS

PROJECT: 021-1306

RECORD OF BOREHOLE: GP-8

SHEET 1 OF 1

LOCATION: Refer to Plan

BORING DATE: Jan.31,2002

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		260.76							
0	CME 75 Bombardier 108mm Hollow Stem Augers	TOPSOIL		0.00 / 260.30							BACKFILL
		Very stiff, brown sandy SILT, trace to some clay, trace to some gravel. (TILL)		0.46	1	50 DO	18				CONCRETE
1											BENTONITE SEAL
2					2	50 DO	15				#3 SILICA SAND
				258.32							WELL SCREEN 50mm Dia. Sch. 40 PVC #50 slot
		Very dense, brown silty SAND to sandy SILT, trace to some gravel, trace clay, occ. cobbles/boulders. (TILL)		2.44							1.5m screen length
3					3	50 DO	55/.15				
				257.41							
		END OF BOREHOLE		3.35							
4		Approximate depth to groundwater table = 0.62m (Feb.11/02)									Top of Pipe Elev. = 261.58m
											Stick-up = 0.82m
5											
6											
7											
8											
9											
10											

MIS-BHS 001 021-1306.GPJ GAL-MISS.GDT 4/24/07 PS

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DKB

CHECKED: FB

PROJECT: 021-1306

RECORD OF BOREHOLE: GP-9

SHEET 1 OF 1

LOCATION: Refer to Plan

BORING DATE: Jan.30,2002

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	CME 75 Bombardier 108mm Hollow Stem Augers	GROUND SURFACE		257.77							
		TOPSOIL		0.00 / 257.47							BACKFILL; CONCRETE
		Firm to hard, mottled brown to brown sandy SILT, trace to some clay, trace to some gravel. (TILL)		0.30	1	50 DO	8				BENTONITE SEAL
1											
					2	50 DO	33				#3 SILICA SAND; WELL SCREEN 50mm Dia. Sch. 40 PVC #50 slot; 1.5m screen length
2				255.33							
		Very dense, brown silty SAND to sandy SILT, trace to some clay and gravel, occ. cobbles/boulders. (TILL)		2.44							
3					3	50 DO	65/.15				
				254.42							
		END OF BOREHOLE		3.35							
		Approximate depth to groundwater table = 0.68m (Feb.11/02)									Top of Pipe Elev. = 258.65m; Stick-up = 0.88m
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: DKB
CHECKED: FB

MIS-BHS 001 021-1306.GPJ GAL-MISS.GDT 4/24/07 PS

PROJECT: 021-1306

RECORD OF BOREHOLE: GP-10

SHEET 1 OF 1

LOCATION: Refer to Plan

BORING DATE: Jan.31,2002

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80); SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}); WATER CONTENT PERCENT (Wp W Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		255.18							
0	CME 75 Bombardier 108mm Hollow Stem Augers	TOPSOIL		0.00 / 254.72							BACKFILL; CONCRETE
1		Very stiff to hard, mottled brown to brown silty SAND to sandy SILT, trace to some clay, trace to some gravel. (TILL)		0.46	1	50 DO	25				BENTONITE SEAL
2					2	50 DO	46				#3 SILICA SAND WELL SCREEN 50mm Dia. Sch. 40 PVC #50 slot; 1.5m screen length
		Very dense, brown silty SAND to sandy SILT, trace to some gravel, trace clay, occ. cobbles/boulders. (TILL)		252.74 / 2.44							
3				251.83 / 3.35	3	50 DO	55/.15				
		END OF BOREHOLE Approximate depth to groundwater table = 0.15m (Feb.11/02)									Top of Pipe Elev. = 255.97m Stick-up = 0.79m
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: DKB
CHECKED: FB

MIS-BHS 001 021-1306.GPJ GAL-MISS.GDT 4/24/07 PS

61-10-1 P-2-1

Ontario Ministry of the Environment

Measurements are Imperial

Well Tag No. for Master Well *(Place Sticker and/or Print Below)*

A068996

Master Well Record for Cluster Well Construction

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Master Well Owner's and Land Owner's Information

First Name	Last Name	E-mail Address
Heather Van Bruinessen	City of Kawartha Lakes	

Mailing Address (Street Number/Name, RR)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
12 Peel Street	Lindsay	ON	K9V3L8	7053249411

Location and Construction of the Master Well in the Cluster

Address of Well Location (Street Number/Name, RR)	Township	Lot	Concession
Lindsay Ops Landfill, Wilson Road	Lindsay		

County/District/Municipality	City/Town/Village	Province	Postal Code
City of Kawartha Lakes	Lindsay	Ontario	K9V

UTM Coordinates	Zone	Easting	Northing	GPS Unit Make	Model	Mode of Operation
NAD 83	17	681188	4911760 8	garmin	etrex	☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify

Overburden and Bedrock Materials *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (Metres) From	Depth (Metres) To
Brown	Silt	w/ gravel & cobbles, trace clay	Fill	0'	4'
Grey	Silt	"	Fill	4'	11'
Grey	Sand	Till (w/ cobbles)	Dense	11'	20'
Grey	Silt	Till	Hard	20'	25'
Grey	limestone			25'	35'
	↳ Fractures at 32' and 34' approximately 2" in thickness				
	EOH @ 35'				

Hole Details

Depth (Metres) From	Depth (Metres) To	Diameter (Centimetres)
0	25'	8.5"
25'	35'	4"

Water Use

☐ Public ☐ Industrial ☐ Not used ☐ Other, *specify*
☐ Domestic ☐ Commercial ☐ Dewatering
☐ Livestock ☐ Municipal ☑ Monitoring
☐ Irrigation ☐ Test Hole ☐ Cooling & Air Conditioning

Method of Construction

☐ Cable Tool ☑ Air Percussion ☐ Digging
☐ Rotary (Conventional) ☐ Diamond ☑ Boring
☐ Rotary (Reverse) ☐ Jetting ☐ Other, *specify*
☐ Rotary (Air) ☐ Driving

Status of Well

☑ Test Hole ☐ Abandoned, Insufficient Supply
☐ Replacement Well ☐ Abandoned, Poor Water Quality
☐ Dewatering Well ☐ Other, *specify*
☐ Alteration (Construction) ☐ Abandoned, other, *specify*

Construction Details

Inside Diameter (Centimetres)	Material (steel, plastic, fibreglass, concrete, galvanized)	Wall Thickness	Depth (Metres) From	Depth (Metres) To
2"	PVC Riser (34" stick-up)	3/16"	0	30'
2"	PVC 10 slot Screen	3/16"	30'	35'

No Casing and Screen Used

Open Hole ☐ Yes ☑ No

Static Water Level Test

4 Metres ~~Feet~~

Screen

☐ Galvanized ☐ Steel ☐ Fibreglass ☐ Concrete ☑ Plastic

Outside Diameter (Centimetres)	Slot No.
2 3/8"	10

Water Details

Water found at Depth	Kind of Water
4 Metres ~~Feet~~ ☐ Gas	☑ Fresh ☐ Salty ☐ Sulphur ☐ Minerals
30 Metres ~~Feet~~ ☐ Gas	☐ Fresh ☐ Salty ☑ Sulphur ☐ Minerals
Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals

Annular Space/Abandonment Sealing Record

Depth Set at (Metres) From	Depth Set at (Metres) To	Type of Sealant Used (Material and Type)	Volume Used (Cubic Metres)
0'	29'	Bentonite	400lbs
29'	35'	#2 Well Sand	50lbs
		EOH @ 35'	

Disinfected ☐ Yes ☑ No If no, provide reason: Test hole

Date Master Well Completed *(yyyy/mm/dd)* 2010/03/12

Cluster Information *(Please also fill out the additional Cluster Well Information for Well Construction for each parcel of land and cluster.)*

Total Wells in Cluster	Please indicate Number of Cluster Well Information Log Sheets Submitted
2	1
Total Wells on this Property: Unknown	

Location of Well Cluster

Detailed Map must be provided as an attachment no larger than legal size (8.5" x 14"). Sketches are not allowed.

☑ Check box to confirm detailed map is provided as per Section 11.1 (3)

Consent to release additional information concerning the cluster to the Director upon request

Signature of Technician/Contractor [signature] Date *(yyyy/mm/dd)* 2010/03/15

Master Well Owner's/Land Owner's consent to use Cluster Form

Signature H. VanBruinessen Date *(yyyy/mm/dd)* 2010/03/17

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Pontil Drilling Ltd.	7318

Business Address (Street No./Name, number, RR)	Municipality
11 Water Street	Mt. Albert

Province	Postal Code	Business E-mail Address
ON	L0G1M0	info@pontildrilling.com

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
2893381838	Smith, Greg

Well Technician's Licence No.	Signature of Technician	Date Submitted *(yyyy/mm/dd)*
2888	[signature]	2010/03/15

Ministry Use Only

Audit No.	Well Contractor No.
M 06941	
Date Received *(yyyy/mm/dd)*	**Date of Inspection** *(yyyy/mm/dd)*

Remarks

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Ontario Ministry of the Environment

Well Tag No. for Master Well *(Print Well Tag No.)*: A068996

Cluster Well Information for Cluster Well Construction

Regulation 903 Ontario Water Resources Act

Property Owner's Information

First Name	Last Name	Mailing Address (Street No./Name, RR)	Municipality
Heather Van Bruinessen	City of Kawartha Lakes	12 Peel St.	Lindsay

Province	Postal Code	E-mail Address	Telephone No. (inc. area code)
ON	K9V 3L8		7053249411

Cluster Well Information

Address of Well Location (Street Number/Name, RR)	Lot	Concession	Township	County/District/Municipality
Lindsay Ops Landfill, Wilson Rd.			Lindsay	City of Kawartha Lakes

City/Town/Village	Province	Postal Code	GPS Unit Make	Model	Unit Mode of Operation
Lindsay	Ontario		garmin	etrex	☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify:

Consent

Property Owner's Consent to use cluster form

Signature	Date (yyyy/mm/dd)
H. Vanke	2010/03/17

Consent to release additional information to the Director upon request

Signature of Technician/Contractor	Date (yyyy/mm/dd)
[signature]	2010/03/15

Well # on Sketch	UTM Coordinates Zone	Easting	Northing	Full Depth of Hole (metres)	Hole Diameter (cm)	Method of Construction	Casing Material	Casing Length (metres)	Screen Interval (metres) From	To	Annular Space Sealant Used	Static Water Level (metres)	Abandonment Sealant Used	Comments	Date of Completion (yyyy/mm/dd)
P-2-2	17	680188	4917608	20'6"	8.5"	Hollow Stem Auger	PVC	15'6"	15'6"	20'6"	Bentonite #2 Well Sand	4'		33½" Stick-up	2010/03/12
↑61-10-2														See P-2-1 for Soil	
														Stratigraphy	

Well Contractor and Well Technician Information

Business Name of Well Contractor	Business Address (Street Number/Name, RR)	Municipality	Province
Pontil Drilling Ltd.	11 Water St.	Mt. Albert	ON

Postal Code	Business Telephone No. (inc. area code)	Well Contractor's Licence No.	Business E-mail Address
L0G1M0	2893381838	7383	info@pontildrilling.com

Name of Well Technician (First Name, Last Name)	Well Technician's Licence No.	Date Submitted (yyyy/mm/dd)	Signature of Technician
Greg Smith	2888	2010/03/15	[signature]

Date 1st Well in Cluster Constructed (yyyy/mm/dd)	Date Last Well in Cluster Constructed (yyyy/mm/dd)
2010/03/12	2010/03/12

Ministry Use Only

Date Received (yyyy/mm/dd)	Date Inspected (yyyy/mm/dd)

Audit No.	Remarks
C 06658	

1991 (11/2006)

Well Owner's Copy

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Log of Borehole MW6-90-II

Project No. MRK-00256269-A0

Drawing No. 13

Project: City of Kawartha Landfill Sites

Sheet No. 1 of 2

Location: Various Landfill Sites, Kawartha Lakes

Lindsay Ops Landfill

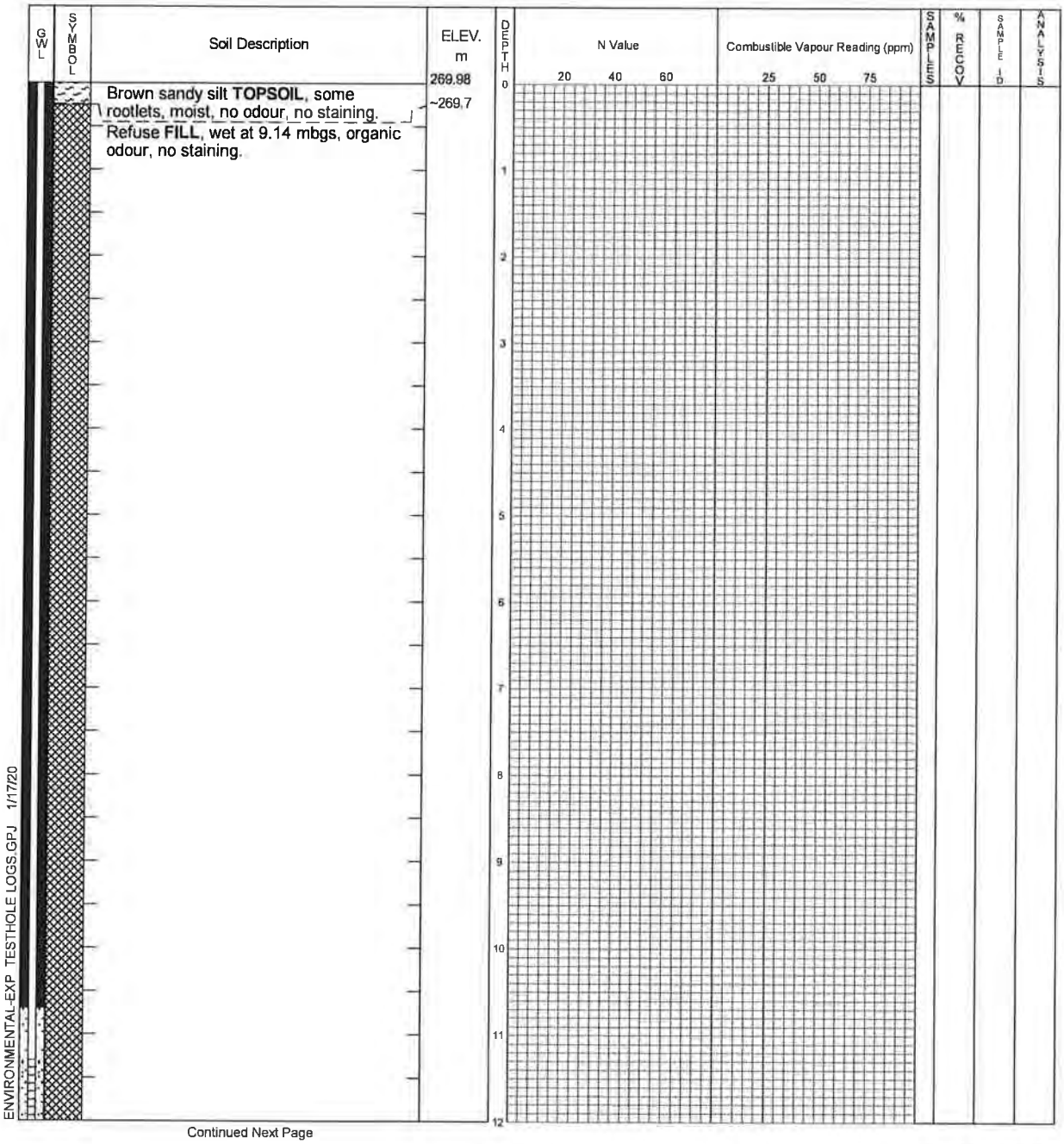
Date Drilled: October 24, 2019

Drill Type: CME-75 Track Mount

Datum:

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		



ENVIRONMENTAL-EXP TESTHOLE LOGS.GPJ 1/17/20

Continued Next Page

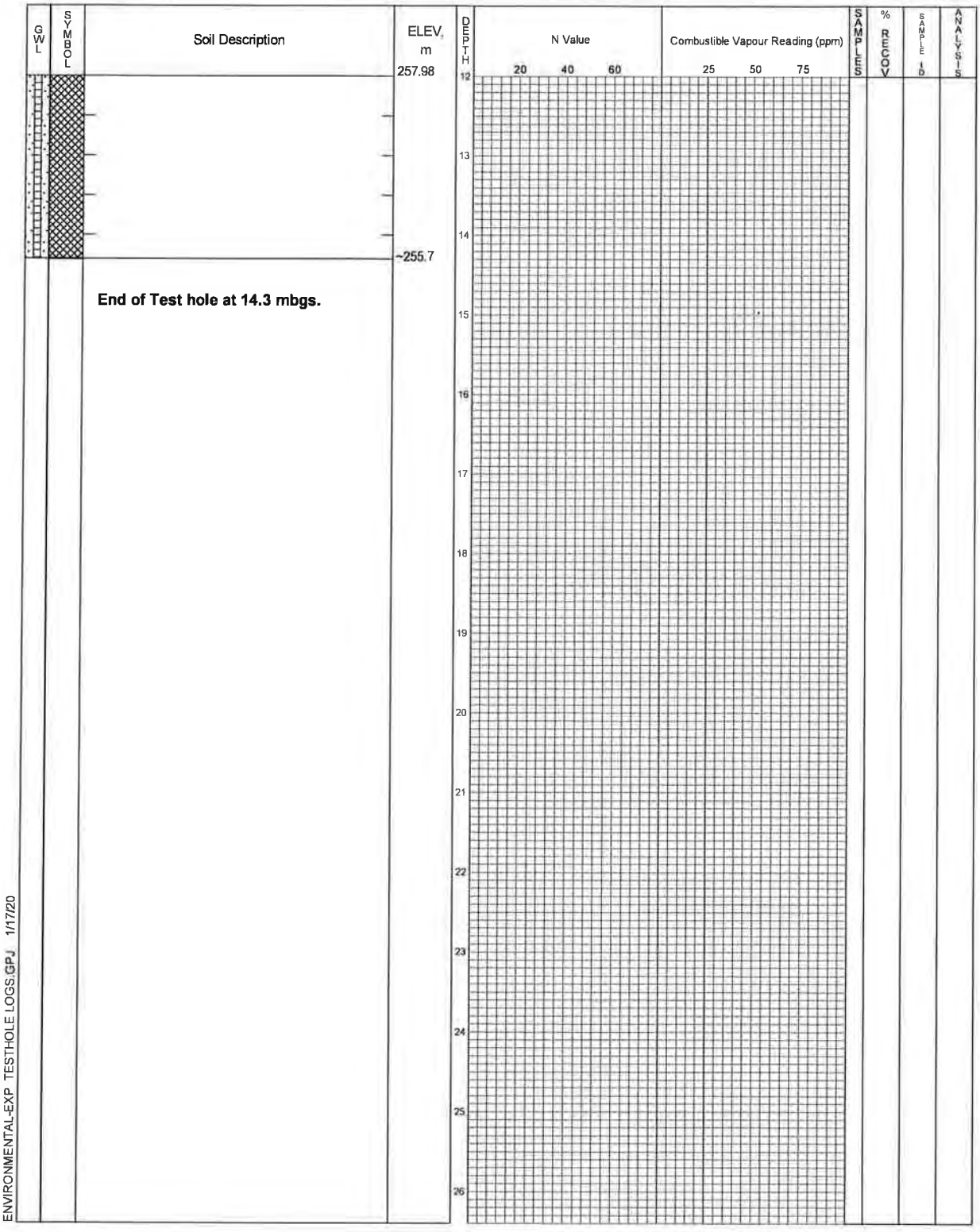
exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)

Log of Borehole MW6-90-II

Project No. MRK-00256269-A0 Drawing No. 13

Project: City of Kawartha Landfill Sites Sheet No. 2 of 2



ENVIRONMENTAL-EXP TESTHOLE LOGS.GPJ 1/17/20

exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)

Log of Borehole MW7-90

Project No. MRK-00256269-A0

Drawing No. 11

Project: City of Kawartha Landfill Sites

Sheet No. 1 of 2

Location: Various Landfill Sites, Kawartha Lakes

Lindsay Ops Landfill

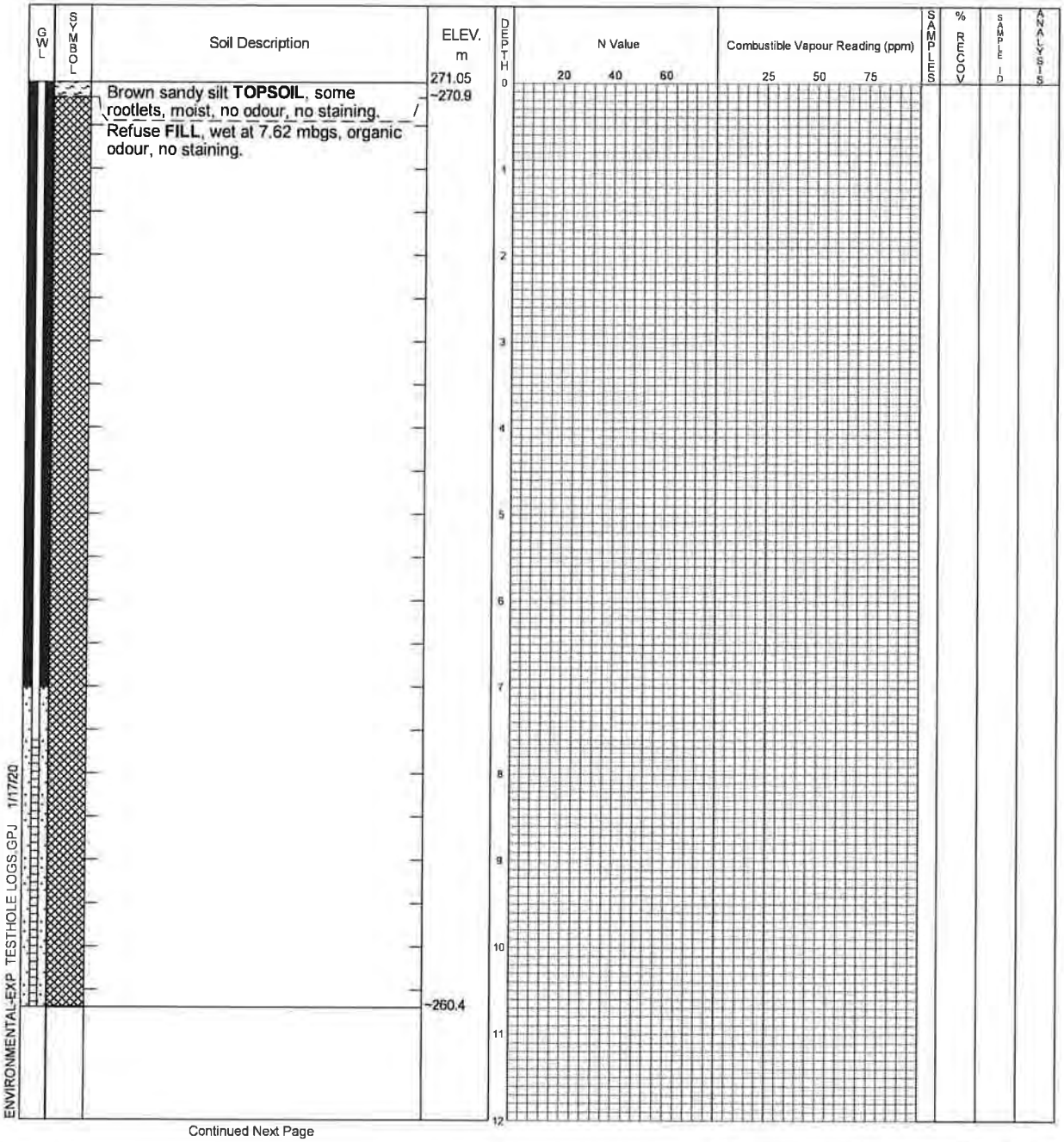
Date Drilled: October 24, 2019

Drill Type: CME-75 Track Mount

Datum:

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		



ENVIRONMENTAL-EXP TESTHOLE LOGS.GPJ 1/17/20

Continued Next Page

Time	Water Level (m)	Depth to Cave (m)

exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Log of Borehole MW7-90

Project No. MRK-00256269-A0 Drawing No. 11

Project: City of Kawartha Landfill Sites Sheet No. 2 of 2

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH	N Value	Combustible Vapour Reading (ppm)	SAMPLES	% RECOV	SAMPLE ID	ANALYSIS
		End of Test hole at 10.7 mbgs.	259.05	12	20 40 60	25 50 75				
				13						
				14						
				15						
				16						
				17						
				18						
				19						
				20						
				21						
				22						
				23						
				24						
				25						
				26						

ENVIRONMENTAL-EXP TESTHOLE LOGS.GPJ 1/17/20

exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)

Log of Borehole MW48-96-II

Project No. MRK-00256269-A0

Drawing No. 12

Project: City of Kawartha Landfill Sites

Sheet No. 1 of 1

Location: Various Landfill Sites, Kawartha Lakes

Lindsay Ops Landfill

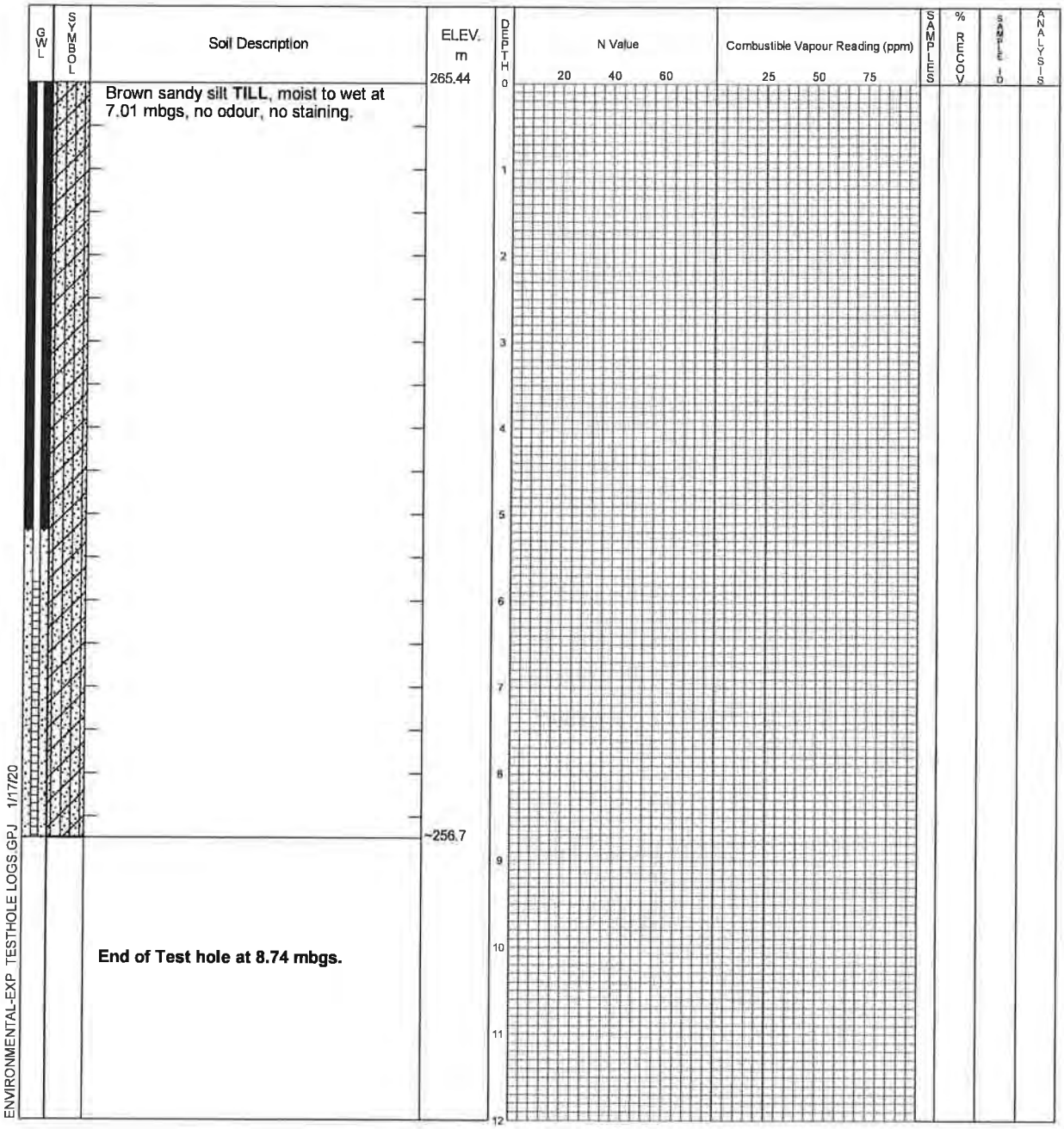
Date Drilled: October 23, 2019

Drill Type: CME-75 Track Mount

Datum:

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		



ENVIRONMENTAL-EXP TESTHOLE LOGS.GPJ 1/17/20

exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)

APPENDIX D

Ground Water Level Data

Table D-1: Groundwater Level Elevations (mASL) (2004-2024)
Lindsay-Ops Landfill Site

Monitor No.	Reference Elevation (mASL)	9-Mar-04	1-May-04	27-Jul-04	1-Oct-04	5-Feb-05	5-May-05	1-Jul-05	5-Oct-05	1-Feb-06	1-May-06	1-Jul-06	1-Oct-06	7-Apr-07	1-Aug-07	7-Oct-07	1-Feb-08	1-Apr-08	1-Jul-08	1-Oct-08	1-Feb-09	1-May-09
6-90-II	270.96	256.12	255.60	-	255.96	255.67	255.80	-	-	255.59	257.32	-	255.15	256.53	256.14	256.22	265.74	267.65	256.65	256.18	256.43	256.60
7-90	271.99	262.84	263.49	-	263.22	-	-	264.62	-	-	-	263.31	261.71	-	-	-	-	260.74	261.81	263.38	263.59	261.86
7-90-II	273.82	-	-	-	-	-	-	-	-	-	-	-	-	265.46	268.79	268.92	264.21	262.43	265.75	263.51	263.11	270.88
11-90	255.53	-	254.06	254.17	253.15	-	254.45	-	-	254.48	254.39	254.13	254.28	254.50	252.95	252.88	254.48	254.88	-	254.31	254.71	254.97
12-91-I	263.18	261.38	261.18	260.86	260.59	261.35	261.20	260.71	260.32	261.19	261.09	260.62	261.24	261.27	260.26	260.63	260.32	260.54	261.12	260.95	261.31	261.39
12-91-II	263.39	261.31	261.07	260.79	260.57	261.35	261.11	260.69	260.37	261.15	261.03	260.60	261.49	261.15	260.09	260.77	260.34	261.70	261.14	260.91	261.25	261.37
13-91-I	262.24	261.23	261.16	260.89	260.31	261.16	261.25	260.56	259.70	261.20	261.12	260.53	260.72	261.83	260.26	259.97	261.76	261.89	261.33	260.97	261.32	261.39
13-91-II	262.53	258.50	258.58	258.39	258.03	258.53	258.65	258.20	257.81	258.64	258.58	258.18	258.18	259.80	258.63	258.39	259.57	259.67	259.24	258.50	258.74	258.78
14-07	259.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	258.67	257.11	256.36	256.30	256.48	256.62
15-91-I	261.00	255.08	255.42	254.80	254.52	254.77	255.01	254.46	254.20	254.67	254.84	254.58	254.88	255.40	-	253.36	254.06	254.45	253.86	253.73	253.95	254.10
15-91-II	260.89	255.79	254.98	255.24	254.98	255.33	255.52	255.06	254.68	255.24	255.30	255.04	255.20	255.98	-	253.81	254.42	254.72	254.28	254.10	254.31	254.45
16-91-I	257.71	254.53	253.97	253.67	253.57	253.73	253.81	253.56	253.12	253.50	253.84	253.84	254.30	254.52	253.24	253.76	254.31	254.51	254.11	253.78	254.07	254.18
16-91-II	258.06	255.53	253.59	253.37	253.38	253.49	253.53	253.36	253.25	253.39	253.97	254.43	254.95	255.06	253.64	253.93	254.45	254.78	254.11	253.44	253.72	253.82
17-91-I	259.92	256.03	255.89	255.53	254.17	255.67	255.94	255.21	254.75	255.47	255.78	255.37	255.60	256.16	254.87	255.05	256.09	256.38	255.77	255.61	255.82	256.11
17-91-II	259.97	256.42	256.21	255.73	255.36	255.98	256.30	255.47	255.05	255.86	255.99	255.58	255.79	256.46	255.24	255.27	256.40	256.74	256.07	255.85	256.13	256.44
18-91	259.51	255.77	255.56	255.25	254.89	255.49	255.75	255.00	254.57	255.24	255.56	255.09	255.48	255.80	254.57	254.63	255.76	256.22	255.47	255.37	255.68	255.90
19-91	258.48	255.43	255.30	255.10	254.80	255.16	255.37	254.88	254.18	255.01	255.28	254.93	255.15	255.57	254.39	254.58	255.43	255.85	255.27	255.12	255.41	255.57
20-91-I	260.81	253.33	253.50	253.32	252.96	253.28	253.55	252.84	252.67	253.23	253.17	252.90	252.90	253.48	-	252.18	252.67	252.99	252.72	252.44	252.65	252.80
20-91-II	260.82	253.39	253.75	253.54	253.23	253.41	253.35	252.84	252.81	253.25	253.33	253.17	253.37	253.64	-	252.34	252.87	253.42	252.89	252.59	252.87	252.99
20-91-III	260.81	253.59	253.86	253.72	253.31	253.11	253.45	252.98	252.96	252.81	253.47	253.33	253.44	253.79	-	252.48	253.02	253.56	253.04	252.74	253.00	253.10
21-91-I	258.01	253.36	253.51	253.34	252.97	253.32	253.56	252.83	252.60	253.11	253.17	252.94	252.92	253.49	252.62	252.89	253.57	253.77	254.13	253.22	253.42	253.58
21-91-II	258.02	251.61	252.62	250.57	251.92	250.98	252.45	252.38	252.49	250.70	252.50	253.98	251.47	252.30	249.53	251.58	251.79	252.06	256.26	253.26	250.60	252.68
21-91-III	258.02	253.41	253.61	253.43	253.13	253.23	253.27	252.73	252.69	253.14	253.22	253.06	253.18	253.45	252.63	253.01	253.52	254.04	256.28	253.23	253.54	253.63
23-07	259.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	256.82	256.19	256.14	256.27	256.40
24-91	258.66	255.45	255.32	255.11	254.79	255.18	255.38	254.86	254.56	255.07	255.30	255.08	255.16	255.50	254.47	254.66	255.45	255.89	255.26	255.14	255.45	255.60
25-91	259.87	258.77	258.58	258.41	257.50	258.84	258.81	257.76	257.04	-	258.84	258.11	255.77	259.12	257.41	257.10	259.37	258.96	258.81	258.94	259.25	259.26
25-96	259.80	255.19	255.26	256.25	254.72	255.14	255.41	254.68	254.48	255.48	255.25	255.12	258.17	255.92	254.79	254.89	255.83	255.96	255.43	254.98	255.51	255.78
27-93	259.83	255.88	255.77	255.39	255.02	255.57	255.85	255.09	254.78	255.48	255.67	255.33	255.50	256.03	254.89	254.87	255.96	256.33	255.69	255.54	255.85	256.06
28-93	262.41	-	255.95	256.01	255.96	255.90	256.08	256.00	255.72	255.91	256.87	256.12	256.03	256.33	256.02	255.96	256.04	256.06	256.07	256.03	256.18	256.91
29-93	259.36	257.61	257.50	257.51	256.78	257.62	257.72	256.96	256.72	257.68	257.60	257.23	257.90	258.18	-	257.19	258.06	258.22	257.86	257.48	257.66	257.75
30-93	249.50	249.23	249.32	249.01	249.22	-	249.29	249.17	249.22	-	249.31	249.26	249.28	249.22	249.17	249.67	249.78	249.87	249.77	249.68	249.77	248.86
31-93	249.16	248.75	248.79	248.63	248.35	248.75	248.77	248.43	248.68	-	249.07	-	249.49	249.48	248.75	249.34	249.57	249.49	249.21	249.38	249.19	249.48
32-93-I	262.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32-93-II	262.28	261.18	261.05	260.90	260.00	-	261.03	260.14	259.16	-	260.96	260.20	260.77	261.02	-	-	-	-	-	261.35	-	261.63
32-93-III	262.48	261.65	261.58	261.31	-	-	261.52	260.75	-	-	261.45	260.73	261.39	261.49	-	-	261.55	261.61	261.36	261.19	261.68	261.57
35-93-I	258.62	-	256.36	256.23	256.03	255.84	256.52	256.04	255.80	255.68	256.40	256.02	256.65	256.69	255.94	255.96	255.48	256.96	256.39	256.33	256.54	256.77
35-93-II	258.86	-	-	-	-	-	-	-	-	256.40	256.14	255.84	256.44	256.38	255.92	255.93	256.56	256.72	256.11	256.14	256.30	256.54
36-93	258.63	257.63	257.27	257.07	256.61	-	257.44	256.70	256.40	-	257.30	256.65	257.50	257.38	256.42	255.93	257.93	257.86	257.33	257.33	257.73	257.67
37-93-I	258.61	257.83	257.45	257.45	256.91	257.65	257.76	256.95	256.50	-	257.64	257.10	256.79	258.07	256.73	256.82	258.26	257.86	257.83	257.65	257.62	257.92
37-93-II	258.93	257.58	257.18	257.15	256.46	-	257.43	256.58	256.40	-	257.07	256.83	257.49	257.66	256.34	256.55	257.83	257.76	257.36	257.30	258.01	257.60
38-93	259.30	258.22	257.95	257.69	257.15	258.03	258.10	257.22	256.83	258.29	257.59	-	258.11	258.23	256.85	256.80	258.50	258.13	258.02	258.03	258.40	258.33
39-93-I	259.55	257.91	257.72	257.55	257.14	257.81	257.99	257.32	256.82	258.03	257.85	257.28	257.91	258.52	257.29	257.20	258.39	258.50	258.14	257.83	258.00	258.05
39-93-II	259.87	258.74	258.31	257.91	256.95	-	258.61	257.27	256.60	-	258.49	257.68	258.19	258.61	-	256.67	258.69	258.76	258.46	258.30	258.81	258.66
43-93-I	261.54	260.19	260.04	259.93	259.21	260.13	260.14	259.19	258.61	260.27	260.05	259.26	259.88	260.27	258.69	258.83	-	260.33	259.77	259.86	257.22	260.30
43-93-II	261.54	260.28	260.15	260.01	259.15	260.30	260.25	259.11	259.03	260.46	260.09	259.22	259.87	260.31	258.47	258.64	260.50	260.41	260.20	260.15	260.32	260.39
44-93-I	263.39	-	262.73	262.11	261.69	-	262.93	261.19	260.85	-	262.36	261.86	262.23	263.20	261.76	261.13	262.96	263.41	262.89	262.64	-	262.37
44-93-II	263.46	262.15	261.91	261.41	261.05	-	261.76	261.68	260.54	262.12	261.78	261.04	261.60	262.07	260.98	260.58	262.01	262.46	261.59	261.39	262.61	-
45-93	266.78	264.00	264.87	263.89	262.83	265.13	265.35	263.65	261.98	265.55	265.08	264.59	262.99	265.62	263.21	261.95	265.51	266.03	264.63	263.83	265.68	265.87
45-95-I	251.92	250.35	250.20	250.01	249.81	250.08	250.15	249.58	249.16	250.16	249.74	249.23	249.67	250.00	249.22	249.69	250.10	250.56	250.25	249.84	250.28	250.30
45-95-II	252.28	250.01	249.84	249.67	249.52	249.78	249.82	249.32	248.95	249.91	248.83	249.06	249.38	249.70	-	249.36	249.76	250.24	249.95	249.55	249.97	249.98
46-95-I	254.87	251.77	251.62	251.44	251.21	251.62	251.65	250.37	250.05	250.43	250.30	250.23	250.25	250.32	250.15	250.34	250.41	250.87	250.54	250.33	250.51	250.65
46-95-II	254.64	253.06	251.95	251.71	251.47	252.82	251.85	250.46	251.79	250.54	250.45	250.37	250.39	250.46	250.26	250.47	250.54	251.01	250.65	250.44	250.62	250.76
47-96-I	255.17	253.42	253.44	253.19	252.92	253.21	253.26	252.06	251.72	252.76	252.43	252.32	252.42	252.54	252.36	252.71	252.77	253.57	253.00	252.49	252.81	252.97
47-96-II	255.15	253.56	253.52	253.23	252.99	253.27	253.33	252.03	252.11	252.83	252.47	252.42	252.44	252.54	252.41	252.77	252.83	253.69	253.16	252.50	252.85	253.04
48-96-I	255.57	252.82	252.99	252.66	252.40	252.66	252.96	252.03	251.79	252.51	252.29	252.14	253.11	252.50	251.97	252.21	252.58	253.16	252.85	252.41	252.72	252.84
48-96-II	255.65	252.80	253.00	252.67	252.35	252.69	252.85	252.07	251.85	252.54	252.33	252.15	252.19	252.52	251.77	252.22	252.63	253.38	252.82	252.39	252.79	252.83
49-96-I	266.27	263.61	263.62	263.04	262.32	263.63	263.70	262.89	260.68	263.61	263.49	262.81	262.77	263.85	262.03	261.46	263.81	264.03	263.48	263.25	263.91	256.01
49-96-II	266.27	263.83	263.84	263.32	262.61	263.87	263.90	263.04	261.44	263.85	263.72	262.83	262.98	265.05	262.19	261.50	264.08	264.29	263.65	263.46	264.11	264.20
49-96-III	266.28	265.02	264.87	264.02	263.48	265.16	264.88	263.69	261.85	265.02	264.76	263.62	263.40	265.16	262.88	261.71	265.10	265.27	264.61	264.52	265.43	265.27
53-98	257.12	255.20	255.05	254.84	254.17	255.12	255.22	254.28	253.31	255.48	255.07	254.14	254.41	255.25	254.03	253.48	255.30	255.53	254.86	254.84	255.29	255.38
54-98	260.78	259.02	258.83	258.56	257.95	258.80	258.93	258.20	257.23	258.96	258.81	258.52	258.39	259.05	257.97	257.50	259.35	259.34	-	259.38	259.50	259.53
55-98-I	266.38	263.58	263.51	263.19	262.21	263.59	263.66	262.58	261.38	263.58	263.45	262.58	262.77	263.81	262.33	261.39	263.80	264.04	263.44	263.22	263.90	263.97
55-98-II	266.35	255.56	255.87	255.90	255.80	255.61	255.93	255.78	255.35	255.75	256.47	255.88	256.15	256.44	255.97	255.94	255.92	256.20	256.27	255.81	255.91	256.28
56-02-I	264.53	263.20	263.50	263.04	262.21	-	263.75	262.63	261.17	-	263.09	262.74	262.82	262.85	262.14	261.17	264.03	264.08	263.50	263.49	263.40	262.97
56-02-II	264.41	263.20	263.00	262.50	261.49	263.20	263.36	262.09	260.02	263.17	263.10	262.12	261.37	263.31	261.15	259.90	263.30	263.48	262.86	263.44	263.57	263.51
57-02-I	256.04	253.89	253.69	253.79	252.68	-	-	253.32	253.06	-	253.96	-	253.88	253.97	252.79	252.78	253.43	253.79	253.25	253.24	253.67	253.80
57-02-II	255.92	254.06	254.09	254.17	253.04	-	-	253.55	253.23	-	254.32	-	254.17	254.31	253.00	252.99	253.82	254.13	253.51	253.41	253.91	254.09
58-02	256.67	254.39	254.07	254.19	253.20	254.19	254.57	253.64	253.53	254.14	254.26	-	254.37	254.50	253.33	254.02	254.52	254.63	254.16	254.24	254.59	254.67
59-05	250.63	-	-	-	-	-	-	-	-	-	-	-	-	250.29	-	250.26	250.36	250.80	250.51	250.26	250.47	250.63
60-05	250.47	-	-	-	-	-	-	-	-	-	-	-	-	249.60	-	249.52	249.51	249.69	249.42	249.48	249.55	249.58
61-10-I	256.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61-10-II	256.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61-10-III	255.98																					
61-17-I	255.96																					
62-17-I	256.19																					
62-17-II	256.20																					
62-17-III	256.17																					

Table D-1: Groundwater Level Elevations (mASL) (2004-2024)
Lindsay-Ops Landfill Site

Monitor No.	1-Oct-09	10-Feb-10	10-May-10	5-Jul-10	10-Oct-10	24-Feb-11	3-May-11	10-Oct-11	22-Feb-12	31-May-12	1-Oct-12	25-Feb-14	5-May-14	15-Jul-14	20-Oct-14	1-Feb-15	1-May-15	1-Jul-15	1-Oct-15	4-Feb-16	20-May-16	12-Jul-16	18-Oct-16
6-90-II	263.64	255.47	268.11	256.09	255.85	256.15	256.02	255.75	-	255.83	255.66	-	-	-	-	-	-	-	-	Dry	254.63	-	Dry
7-90	257.19	-	257.39	267.51	261.69	-	271.85	261.79	-	261.57	261.33	-	261.03	261.07	261.12	-	-	-	-	-	262.19	-	Dry
7-90-II	264.15	265.05	263.39	263.35	265.84	264.83	265.04	263.72	-	265.37	-	-	265.12	264.51	-	-	-	264.12	-	-	262.84	-	265.02
11-90	254.46	254.39	254.43	254.38	254.44	254.37	254.87	254.62	254.65	254.59	254.35	254.80	254.93	254.45	254.65	254.39	254.53	254.77	254.51	255.15	254.85	254.68	254.73
12-91-I	261.22	261.19	261.22	260.99	261.23	261.26	261.41	261.22	261.19	261.11	260.82	261.23	261.40	260.84	261.01	261.13	260.90	261.00	260.61	261.46	260.95	260.57	260.53
12-91-II	261.30	261.13	261.22	260.97	261.67	261.18	261.55	261.22	260.65	261.07	260.98	261.28	261.50	260.81	261.10	261.17	260.94	260.96	260.60	261.73	260.95	260.60	260.80
13-91-I	261.22	261.15	261.21	261.10	259.8	261.28	261.45	261.31	261.33	261.33	260.24	261.39	261.41	260.71	260.95	260.92	261.01	261.08	261.05	260.38	260.20	259.42	258.62
13-91-II	258.61	258.63	258.68	258.57	258.35	258.68	258.77	258.72	258.75	258.8	258.09	258.79	258.80	258.39	258.49	258.47	258.58	258.60	257.97	258.55	258.51	257.99	257.56
14-07	256.38	256.34	256.37	256.26	256.29	256.25	256.72	256.52	256.60	256.33	256.16	256.70	256.57	256.17	256.40	256.10	256.15	256.23	255.99	256.66	256.20	256.02	255.93
15-91-I	253.81	253.87	253.79	253.74	253.58	253.82	254.06	253.83	255.24	253.82	253.44	253.81	254.04	254.06	253.99	253.68	253.69	253.79	253.40	253.89	254.00	253.27	252.12
15-91-II	254.10	254.18	254.18	254.1	253.88	254.18	254.52	254.11	255.76	253.94	253.82	254.18	254.53	253.64	253.60	254.11	254.16	254.25	253.88	254.31	254.20	253.95	253.62
16-91-I	253.87	253.91	253.93	253.87	253.64	253.95	253.86	253.69	253.63	253.65	253.5	254.64	253.87	253.62	253.64	254.85	253.68	253.72	253.49	253.69	253.54	253.45	253.33
16-91-II	253.62	253.59	253.59	253.54	253.28	253.67	253.41	253.38	253.29	253.29	253.21	-	253.39	253.18	253.23	254.61	253.23	253.25	253.13	253.19	253.06	253.06	253.02
17-91-I	255.81	255.82	255.69	255.61	255.45	255.76	256.14	256.78	255.81	255.81	255.23	255.92	256.05	255.47	255.58	255.54	255.63	255.73	255.09	256.77	255.70	255.22	254.89
17-91-II	256.09	256.03	255.94	255.88	255.68	256.01	256.5	255.98	256.07	256.08	255.43	256.17	256.39	255.66	255.79	255.46	255.84	255.96	255.27	256.39	255.70	255.19	254.80
18-91	255.57	255.51	255.55	255.42	255.25	255.64	255.98	255.67	255.64	255.62	255.01	255.73	255.91	255.25	255.51	255.16	255.44	255.46	254.78	256.01	255.45	254.90	254.46
19-91	255.25	255.25	255.2	255.13	254.97	255.21	255.59	255.32	255.26	255.27	254.87	255.35	255.51	254.98	255.11	255.03	255.15	255.21	254.78	255.61	255.20	254.81	254.43
20-91-I	252.48	252.56	252.35	252.39	252.24	252.68	252.57	252.32	252.47	252.33	252.05	252.21	252.43	252.54	252.12	259.00	252.85	252.34	254.39	-	251.68	251.98	251.76
20-91-II	252.64	252.66	252.66	252.64	252.54	252.85	252.95	252.67	252.60	252.63	252.37	252.80	257.01	252.34	252.62	252.62	252.70	252.78	252.47	252.89	252.67	252.78	252.13
20-91-III	252.79	252.73	252.74	252.86	252.62	252.78	253.09	252.79	252.64	252.70	252.4	252.86	252.96	252.59	252.67	252.63	252.70	252.78	252.48	252.91	252.69	252.17	252.13
21-91-I	253.06	253.3	253.13	253.16	253.03	253.28	253.35	253.1	250.46	253.10	252.83	255.53	253.22	253.08	252.81	-	252.83	253.21	252.80	250.63	252.78	252.84	252.51
21-91-II	253.19	250.62	252.36	247.28	253.25	250.65	251.98	252.08	250.62	252.28	251.58	-	252.48	248.66	251.74	-	252.63	246.73	251.01	253.58	252.70	248.26	251.38
21-91-III	253.24	253.34	253.34	253.33	251.58	253.49	253.61	253.35	253.30	253.34	253.13	-	253.71	253.36	253.43	-	253.53	253.56	253.26	253.58	253.39	252.60	252.86
23-07	256.21	256.15	256.15	256.06	256.01	256.14	257.45	256.28	256.35	256.15	255.86	256.44	256.43	255.97	256.16	255.98	256.05	256.04	255.80	256.67	256.04	255.86	255.67
24-91	255.28	255.26	255.24	255.15	255.01	255.32	255.63	255.36	255.31	256.3	254.9	-	255.56	255.03	255.16	255.08	255.21	255.29	254.83	255.79	255.33	256.54	254.60
25-91	259.16	259.29	257.14	258.66	259.01	-	258.89	259.17	255.94	258.99	258.06	-	259.25	258.45	259.21	-	258.69	258.81	257.66	259.09	258.86	256.10	Dry
25-96	255.51	255.6	255.42	255.34	255.02	255.3	258.8	255.29	253.59	255.34	254.84	255.41	255.64	255.24	255.19	254.96	255.12	255.49	254.95	255.74	255.50	255.25	254.46
27-93	255.73	255.71	255.65	255.56	255.41	255.65	256.08	255.83	255.77	255.76	255.16	255.88	256.05	255.42	255.58	255.45	255.61	255.69	255.04	256.04		254.78	254.62
28-93	256.17	255.68	256.32	255.97	256.08	255.88	256.19	256.18	255.58	256.31	255.97	256.32	256.40	256.64	256.32	256.34	256.54	260.94	256.24	256.49	256.47	256.24	256.10
29-93	257.68	257.62	257.76	257.33	257.59	257.64	258.78	257.71	257.76	257.65	257.09	257.92	257.93	257.19	257.62	257.12	257.33	257.48	256.83	258.05	257.54	256.92	256.61
30-93	249.75	249.69	249.67	249.47	249.71	-	249.77	249.87	247.77	249.78	249.66	-	-	249.86	249.57	249.59	249.54	249.50	249.44	249.59	249.65	249.65	249.57
31-93	249.46	249.57	249.45	249.18	249.47	-	249.47	249.48	-	249.42	249.37	-	249.47	249.42	249.41	249.46	249.24	249.12	249.15	249.44	249.38	249.20	249.06
32-93-I	-	-	-	-	-	-	-	-	-	-	-	-	-	262.33	262.38	262.46	-	261.10	261.72	261.39	-	260.31	260.74
32-93-II	261.43	261.44	261.53	261.09	261.1	261.4	261.53	261.30	-	261.4	259.63	-	261.41	260.90	260.69	261.58	261.03	-	260.16	-	-	259.94	259.04
32-93-III	261.35	261.54	261.51	261.04	261.19	-	261.49	261.37	-	261.59	-	-	261.59	260.86	261.38	260.14	261.26	261.39	-	261.55	-	Dry	260.69
35-93-I	256.53	256.4	256.46	256.32	256.26	256.37	256.85	256.63	256.70	256.46	256.13	-	256.88	256.19	256.34	250.92	256.27	256.34	256.06	257.05	256.30	255.77	255.91
35-93-II	256.29	256.14	256.21	256.1	256.12	256.09	256.65	256.41	256.52	256.22	256	-	256.76	256.00	256.13	257.12	256.03	256.08	255.92	257.11	255.88	255.95	255.85
36-93	257.66	257.82	257.61	257.25	257.46	-	257.74	257.67	257.66	257.54	256.96	257.73	257.68	256.97	257.31	257.50	257.06	257.20	256.74	257.87	257.33	256.66	256.35
37-93-I	257.89	257.64	257.87	257.54	257.72	-	257.94	257.88	256.87	257.84	256.86	-	257.91	257.31	257.68	257.57	257.43	257.55	256.89	257.94	257.67	256.95	256.34
37-93-II	257.57	257.69	257.6	257.11	257.47	-	257.6	257.55	-	257.57	257.27	-	257.62	256.88	257.46	258.05	257.03	257.54	256.60	257.65	257.41	256.44	255.91
38-93	258.35	258.38	258.34	257.91	258.1	258.36	258.39	258.34	258.33	258.28	257.44	-	258.32	257.53	258.02	257.36	257.79	257.93	257.07	258.39	258.13	257.09	256.27
39-93-I	257.96	258.84	257.95	257.77	257.74	257.9	258.02	254.95	257.99	257.93	257.26	-	258.97	257.46	257.72	258.65	257.67	257.70	257.09	258.98	257.81	257.22	256.58
39-93-II	258.61	258.65	258.66	258.1	257.73	-	258.67	258.57	-	258.47	257.26	258.06	258.62	257.54	257.75	-	258.18	258.16	256.83	258.65	258.45	257.23	256.02
43-93-I	260.04	260.1	260.18	259.86	259.86	260.15	260.20	260.13	259.55	260.12	259.17	260.21	260.26	259.50	259.87	259.93	259.63	259.88	-	260.28	260.09	259.15	258.23
43-93-II	260.37	260.21	260.42	259.9	260.07	260.27	260.49	260.55	260.00	260.24	259.04	260.46	260.35	259.40	260.15	260.02	260.13	260.11	-	260.47	260.22	259.03	258.09
44-93-I	262.86	263.31	263.07	262.75	262.37	263.37	263.41	262.94	261.86	262.96	261.86	-	-	262.46	262.61	263.38	262.81	263.03	261.87	-	263.01	262.18	261.07
44-93-II	261.70	261.69	261.73	261.5	261.45	261.79	262.38	261.71	-	261.8	261.09	261.88	262.34	261.31	261.47	261.56	261.52	261.79	261.06	262.50	261.71	261.12	260.67
45-93	263.94	264.95	264.84	264.27	264.01	264.92	265.82	264.02	264.93	264.86	262.84	264.92	265.76	263.72	262.98	264.24	264.54	264.95	262.74	265.66	264.78	263.35	261.93
45-95-I	249.54	249.85	249.77	249.73	249.8	249.79	250.37	250.05	250.17	250.33	250.27	250.33	250.36	249.95	250.25	Feb-15	May-15	Jul-15	Oct-15	250.43	251.16	250.96	249.80
45-95-II	249.56	249.54	249.45	249.43	249.51	249.52	250.01	249.73	249.83	249.92	249.91	249.97	250.02	249.56	249.92	250.19	250.12	249.14	250.10	250.06	249.76	249.62	249.50
46-95-I	250.36	250.32	250.39	250.34	250.48	250.33	250.6	250.53	250.57	250.77	250.58	250.46	250.85	250.42	250.36	249.82	249.78	249.74	249.75	250.43	250.51	250.40	250.31
46-95-II	250.48	250.42	250.49	250.41	252.38	250.48	250.7	250.65	250.68	250.89	250.69	250.68	251.08	250.66	250.61	250.30	250.35	250.33	250.28	250.66	250.75	250.58	250.61
47-96-I	252.51	252.54	252.51	252.55	252.64	252.55	252.98	252.73	252.66	252.69	252.49	252.67	252.93	252.68	252.42	250.46	250.59	250.50	250.52	252.60	252.60	252.50	252.52
47-96-II	252.53	252.56	252.52	252.58	252.67	252.64	253.04	252.75	252.56	252.51	252.42	252.67	252.85	252.58	252.39	252.38	252.55	252.72	252.40	252.59	252.53	252.46	252.55
48-96-I	252.36	252.5	252.45	252.43	252.39	252.63	252.82	252.49	252.80	253.01	252.79	253.10	253.45	252.89	252.83	252.33	252.57	252.83	252.40	252.98	252.97	252.72	252.59
48-96-II	252.35	252.52	252.45	252.41	252.43	252.57	252.86	252.54	252.79	252.98	252.78	253.15	253.35	252.94	252.87	253.00	252.97	253.03	252.72	253.03	252.99	252.72	252.60
49-96-I	263.49	263.67	263.65	263.35	262.92	263.79	264.03	263.58	263.94	263.67	262.32	263.79	263.97	263.02	262.98	252.97	252.95	252.97	252.73	264.00	263.61	262.74	261.41
49-96-II	263.75	263.82	263.87	263.48	263.04	263.86	264.23	263.72	263.88	263.83	262.42	264.20	264.34	263.30	263.25	263.36	263.33	263.59	262.36	264.50	263.93	263.05	261.62
49-96-III	265.06	264.83	265.12	264.44	263.58	264.89	265.4	264.95	265.14	264.87	262.74	265.29	265.37	263.97	264.14	263.86	263.69	263.82	262.65	265.38	264.87	263.70	261.95
53-98	254.98	254.96	255	254.78	254.79	255.07	255.42	-	255.34	254.97	254.16	255.20	255.27	254.52	254.95	252.83	252.63	252.79	252.65	255.51	254.98	254.24	253.44
54-98	259.54	259.62	259.51	259.33	259.38	-	259.6	259.62	-	259.46	258.7	-	259.50	258.65	259.39	254.83	254.63	254.96	254.17	259.61	-	258.76	257.52
55-98-I	263.49	263.6	263.66	263.3	262.91	263.76	265.00	263.56	263.72	263.63	262.29	263.81	263.97	262.96	263.07	259.42	259.21	259.26	258.41	264.03	263.53	262.66	261.28
55-98-II	254.11	256.58	265.42	256.62	257.12	-	256.33	256.24	256.50	256.31	255.93	256.36	256.42	256.50	256.27	263.32	263.35	263.51	262.29	255.48	256.30	256.34	256.04
56-02-I	263.70	264.05	263.69	263.46	263.23	263.94	263.59	263.78	264.02	263.76	262.46	-	263.90	263.14	263.34	256.14	256.09	256.50	255.43	264.09	-	262.77	261.05
56-02-II	263.24	263.71	263.37	263.01	262.04	263.48	263.64	263.31	263.26	263.37	261.08	-	263.53	262.46	262.57	264.08	263.37	263.43	262.37	263.54	-	262.01	259.88
57-02-I	253.36	253.19	253.34	253.19	253.37	253.16	253.7	253.76	253.44	253.28	253.25	-	253.66	253.21	253.48	263.58	262.98	262.97	261.44	253.82	253.64	253.51	253.60
57-02-II	253.62	253.37	253.58	253.51	253.65	253.24	254.00	253.4	253.62	253.46	253.53	-	253.99	253.35	253.76	254.83	253.36	253.56	253.43	254.13	254.06	254.08	254.15
58-02	254.49	254.28	254.51	254.22	254.57	254.4	254.12	254.56	254.62	254.39	254.48	-	254.83	254.35	253.93	253.20	253.65	253.91	253.81	253.99	-	-	253.76
59-05	250.34	250.28	250.36	250.32	250.44	250.22	249.46	250.51	250.50	250.65	250.51	-	-	250.38	250.36	253.59	253.68	253.46	253.55	250.39	250.43	250.30	250.22
60-05	249.55	249.41	249.57	249.35	249.59	249.51	249.44	249.55	249.54	249.5	249.46	249.54	249.60	249.29	249.45	250.56	250.23	250.31	250.22	249.51	249.37	249.21	249.21
61-10-I	-	-	253.98	253.73	253.73	-	254.01	253.86	253.85	253.85	253.62	251.08	254.21	253.80	253.97	249.37	249.24	248.91	249.32	254.18	253.97	253.57	253.50
61-10-II	-	-	253.98	253.75	253.71	253.86	254.05	253.90	253.90	253.91	253.64	254.19	254.28	253.81	254.09	253.91	253.88	254.05	253.69	254.24	253.94	253.61	253.49
61-10-III																							
61-17-I																							
62-17-I																							
62-17-II																							
62-17-III																							

Table D-1: Groundwater Level Elevations (mASL) (2004-2024)
Lindsay-Ops Landfill Site

Monitor No.	1-Feb-17	1-May-17	1-Jul-17	1-Oct-17	15-Feb-18	8-May-18	25-Jul-18	16-Oct-18	14-Feb-19	8-May-19	15-Jul-19	7-Oct-19	5-Feb-20	5-May-20	15-Jul-20	13-Oct-20	26-Feb-21	3-May-21	5-Jul-21	13-Oct-21	22-Feb-22	2-May-22	26-Jul-22
6-90-II	256.25	257.27	258.84	256.11	256.32	256.13	Dry	256.08	256.16	DRY	256.46	255.93	256.45	255.75	256.40	256.12	256.27	256.40	256.06	256.16	256.61	256.59	256.47
7-90	blocked	blocked	blocked	blocked	blocked	blocked	blocked	blocked	blocked	blocked	blocked	blocked	259.18	264.56	258.06	259.17	259.74	259.33	259.17	259.23	259.85	259.74	259.55
7-90-II	264.52	265.28	269.99	263.32	273.28	262.97	263.14	264.21	265.14	262.76	-	263.12	264.26	259.63	262.81	265.06	263.07	263.05	264.22	262.50	263.17	263.59	263.50
11-90	255.28	255.63	255.01	254.69	254.91	255.03	254.33	254.10	254.90	255.16	254.45	253.92	254.80	254.73	253.80	253.77	252.45	253.95	253.33	253.36	254.02	254.12	253.62
12-91-I	261.62	261.23	261.16	261.10	261.19	260.90	261.19	260.87	261.08	261.10	260.75	260.23	260.97	260.95	261.11	260.49	260.90	261.41	261.61	261.00	261.50	261.30	260.99
12-91-II	261.85	261.22	261.05	261.16	261.06	260.92	261.51	260.85	261.04	261.31	260.83	260.50	261.19	261.19	261.19	260.80	261.20	261.66	261.52	261.11	261.48	261.22	260.98
13-91-I	261.28	261.23	261.33	259.65	261.23	261.29	260.41	259.50	260.15	260.37	259.65	258.75	260.20	260.24	259.63	258.97	260.03	260.36	259.84	259.88	260.40	260.35	259.77
13-91-II	258.52	258.52	258.52	258.27	258.50	258.57	259.02	257.82	258.26	259.02	258.37	257.92	258.69	259.84	258.48	258.01	258.59	259.03	258.33	258.49	258.99	259.04	258.48
14-07	257.59	256.50	256.39	256.34	256.33	256.35	256.06	256.07	256.14	256.62	255.98	255.82	256.33	256.13	255.86	255.89	255.86	256.38	256.06	255.89	256.43	256.30	255.93
15-91-I	253.91	253.81	253.77	253.55	253.79	253.94	253.46	253.43	253.70	255.20	254.93	254.30	254.90	254.99	254.53	254.49	252.80	252.98	252.39	252.86	254.02	254.26	254.06
15-91-II	254.32	254.39	254.32	254.03	254.22	254.47	254.04	253.95	254.15	255.57	255.12	254.76	255.38	255.33	255.09	254.91	255.21	255.14	254.75	254.66	255.14	255.36	255.36
16-91-I	252.55	253.08	253.67	253.61	252.74	253.13	253.61	255.62	253.69	253.96	253.46	253.36	253.64	253.70	253.06	253.43	251.44	251.55	251.43	251.73	252.75	252.89	252.81
16-91-II	251.12	253.86	253.21	253.12	251.01	254.04	253.13	253.12	253.15	253.48	253.20	253.26	253.43	253.45	253.05	253.25	253.15	253.35	252.90	253.12	253.31	253.39	253.22
17-91-I	256.08	255.65	255.77	255.37	255.74	255.83	255.11	255.22	255.47	256.12	255.50	254.88	255.82	255.77	255.12	255.17	254.22	254.78	249.67	254.52	255.35	255.40	255.09
17-91-II	256.42	256.14	256.04	255.66	255.95	256.14	255.23	255.37	frozen	256.35	255.61	254.99	256.03	255.93	255.22	255.31	254.86	255.49	254.79	255.05	255.77	255.79	255.34
18-91	256.06	255.69	255.64	255.40	256.56	255.74	254.79	254.91	255.40	255.93	254.99	254.60	255.70	255.60	254.81	254.68	255.01	255.43	255.16	254.95	255.48	255.53	255.20
19-91	255.65	255.32	255.24	255.08	255.23	255.48	254.87	255.92	255.12	255.73	255.03	254.62	258.18	255.35	254.90	254.90	257.18	254.50	253.88	254.21	254.90	255.02	254.77
20-91-I	frozen	252.27	252.28	252.00	252.10	252.37	258.95	258.53	253.42	253.01	253.22	252.52	253.32	252.72	252.80	257.37	250.66	251.04	250.99	251.42	252.06		252.08
20-91-II	252.84	252.89	252.73	252.77	252.10	253.28	252.75	252.74	252.89	253.16	253.32	253.05	252.95	253.63	252.84	253.21	249.82	249.54	249.28	249.40	251.39	251.60	251.44
20-91-III	252.86	252.90	252.75	252.78	252.92	253.30	252.76	252.76	252.91	253.16	253.77	253.05	253.54	255.52	253.32	253.21	249.95	249.56	249.31	249.37	251.39	251.60	251.45
21-91-I	258.03	253.16	253.00	252.69	250.91	253.12	252.67	252.60	252.41	253.12	252.84	252.23	252.80	252.72	249.48	252.41	250.65	251.07	250.80	251.80	252.08	252.32	252.08
21-91-II	258.03	252.87	247.78	251.57	253.76	253.02	250.51	252.30	251.51	253.02	249.41	251.75	251.02	252.76	250.30	251.79	250.56	250.00	246.87	248.65	249.03	250.39	248.53
21-91-III	258.03	253.66	253.51	253.55	252.64	254.09	253.66	253.56	253.68	254.16	253.76	253.04	253.53	253.62	250.17	253.19	249.33	249.43	248.91	249.29	251.34	251.50	251.26
23-07	256.84	256.31	256.20	256.10	256.19	256.12	255.84	255.85	256.00	256.55	256.02	255.77	256.33	255.18	255.80	255.86	255.45	255.91	255.62	255.61	256.17	256.17	255.86
24-91	255.71	255.38	255.32	254.91	255.30	255.54	254.92	255.02	frozen	255.71	255.15	254.61	255.34	255.35	254.91	254.89	257.68	254.41	254.37	254.16	254.81	254.96	254.75
25-91	Frozen	259.23	259.14	259.21	259.43	259.15	256.01	258.08	frozen	258.97	258.36	256.75	259.04	258.87	257.51	258.05	259.11	259.06	258.97	258.72	259.09	259.05	258.52
25-96	255.45	255.67	255.39	254.99	255.49	255.49	254.05	254.99	255.47	255.60	255.02	254.68	255.32	255.42	254.89	254.95	254.05	254.30	253.20	253.80	254.85	255.02	254.43
27-93	256.10	255.84	255.74	255.39	255.68	255.88	255.06	255.12	255.48	256.04	255.44	254.31	254.59	255.32	255.05	255.10	254.13	254.64	254.31	254.27	255.17	255.29	254.99
28-93	256.01	256.33	256.01	256.35	256.18	256.32	256.29	256.15	256.27	256.11	256.28	256.17	256.13	255.49	256.17	256.04	255.92	255.71	255.30	255.51	255.70	255.85	255.92
29-93	258.01	257.81	257.77	257.73	257.74	257.80	255.99	256.96	257.32	257.98	257.36	256.56	257.87	257.85	256.83	256.98	257.67	258.07	257.66	257.52	258.05	257.93	257.66
30-93	249.60	249.87	249.87	249.63	249.63	249.87	249.63	249.66	frozen	249.50	249.30	249.18	249.38	248.51	249.05	249.27	249.21	249.32	249.30	249.50	249.37	249.41	249.50
31-93	249.45	249.36	249.37	249.33	249.57	249.40	249.15	249.32	frozen	248.66	248.47	248.42	248.75	248.56	248.18	248.56	248.67	248.70	248.73	248.58	248.76	248.70	248.54
32-93-I	262.48	261.31	261.38	261.16	261.44	262.48	261.68	261.43	frozen	262.48	262.48	260.94	262.48	262.48	262.38	261.91	261.64	261.60	261.27	261.23	261.68	261.54	261.18
32-93-II	frozen	262.50	262.50	262.18	262.50	262.50	260.35	260.50	frozen	261.35	260.94	259.44	261.20	260.80	260.75	260.77	262.50	262.50	262.27	262.50	262.50	262.50	262.50
32-93-III	261.57	261.56	261.51	261.36	261.70	261.51	Dry	260.88	frozen	261.47	260.96	dRY	261.53	261.36	260.84	260.83	261.53	261.59	261.20	261.19	261.56	261.58	261.09
35-93-I	257.28	256.54	256.42	255.37	256.43	256.56	256.04	256.09	255.93	257.13	256.20	255.91	256.59	256.41	255.99	256.04	255.84	256.51	255.99	255.79		256.50	256.15
35-93-II	257.33	256.36	256.15	256.25	256.18	256.42	255.90	255.95	256.33	257.28	256.14	256.04	256.59	256.36	255.99	256.09	256.33	256.95	256.44	256.19		256.55	256.17
36-93	257.99	257.51	257.55	257.27	257.43	257.50	256.53	256.73	256.17	257.95	256.84	255.80	257.47	257.32	256.45	256.59	257.29	257.53	257.23	256.75	257.63	257.44	256.93
37-93-I	258.07	257.86	257.83	257.66	257.82	257.89	256.82	257.06	frozen	258.03	257.11	256.41	257.84	257.81	256.35	256.85	257.54	257.77	257.51	257.37	257.98	257.88	257.25
37-93-II	257.65	257.36	257.55	257.20	257.56	257.30	256.45	256.83	frozen	258.07	257.24	256.42	258.06	257.84	257.09	256.90	257.70	257.99	257.83	257.48	258.15	257.95	257.31
38-93	258.41	258.29	258.21	257.94	258.29	258.29	257.06	257.11	frozen	258.40	257.54	256.45	258.29	258.22	257.34	257.03	258.16	258.36	258.07	257.76	258.48	258.33	257.56
39-93-I	258.00	257.92	257.93	257.70	257.97	257.90	257.17	257.23	257.60	258.04	257.27	256.57	257.83	257.83	257.00	257.12	257.33	257.35	257.33	257.33	257.85	257.85	257.41
39-93-II	frozen	258.37	258.35	258.41	258.67	258.55	257.28	256.88	frozen	259.07	258.18	256.78	259.06	258.90	257.39	257.48	259.02	258.80	258.77	258.39	259.05	259.00	258.25
43-93-I	260.12	260.22	260.14	259.76	260.20	260.21	259.41	259.55	259.99	260.30	258.58	258.86	259.98	260.00	259.26	259.27	259.81	260.15	259.58	259.64	260.09	260.17	259.68
43-93-II	260.64	260.20	260.10	260.19	260.25	260.19	259.22	259.67	260.11	259.95	258.28	258.33	259.93	259.85	258.91	259.09	259.81	260.11	259.60	259.59	260.09	259.98	259.51
44-93-I	263.41	263.19	263.07	262.51	263.31	263.17	262.11	261.71	frozen	263.29	262.40	261.26	263.34	262.66	261.99	261.64	262.94	263.26	262.25	262.36	263.04	263.14	261.60
44-93-II	262.78	262.81	262.70	262.08	262.86	262.77	261.56	261.24	frozen	262.89	261.84	261.03	263.41	262.26	261.52	261.16	261.80	262.84	261.81	261.60	262.05	262.86	262.42
45-93	265.49	265.36	265.09	263.48	265.04	265.61	263.54	262.63	frozen	265.72	264.12	262.51	265.34	265.10	263.54	262.38	264.01	265.47	263.63	263.35	264.30	265.40	264.00
45-95-I	250.49	250.37	250.25	250.02	250.08	250.35	250.12	249.92	250.03	250.27	249.79	249.71	250.03	249.96	249.59	249.79	249.84	249.91	248.77	249.98	250.11	250.10	249.68
45-95-II	250.26	249.99	249.90	249.81	249.74	249.92	249.77	249.59	249.67	250.24	249.90	249.74	250.02	249.77	249.60	249.78	249.84	250.01	250.02	249.97	250.09	250.08	249.76
46-95-I	250.52	250.85	250.79	250.52	250.48	250.77	250.57	250.44	250.51	250.82	250.44	250.23	250.33	250.42	250.57	250.38	249.81	250.14	252.23	250.42	250.55	250.17	250.45
46-95-II	250.71	251.07	251.06	250.77	250.73	251.04	250.80	250.69	250.65	250.95	250.49	250.35	250.44	250.54	250.44	250.50	249.89	250.24	250.01	250.54	250.63	250.80	250.50
47-96-I	252.63	253.11	253.07	252.68	252.78	253.28	252.88	252.78	252.83	253.43	252.97	252.52	252.45	252.65	252.15	252.42	250.38	250.74	250.72	251.48	252.04	252.33	252.10
47-96-II	252.60	253.08	253.06	252.64	252.71	253.27	252.90	252.82	252.82	253.59	253.12	253.80	252.47	252.74	252.09	252.46	251.50	251.97	250.71	252.71	252.65	252.96	252.74
48-96-I	252.94	253.50	253.38	253.05	253.26	253.72	253.14	252.90	253.25	253.59	253.27	252.69	253.07	253.12	252.71	252.83	250.85	250.87	251.00	251.42	252.21	252.57	252.23
48-96-II	253.04	253.54	253.36	253.10	253.35	253.75	253.16	253.30	253.35	254.20	253.81	DRY	253.02	253.07	252.67	252.76	250.72	250.95	251.01	251.45	252.32	252.53	252.21
49-96-I	263.95	263.84	263.88	263.02	263.73	263.83	262.56	262.17	263.34	263.83	263.06	261.68	263.67	263.59	262.61	262.05	263.30	263.89	262.89	263.04	263.83	263.84	262.97
49-96-II	264.51	264.36	264.20	263.44	264.22	264.34	262.91	262.42	263.72	264.40	263.47	261.92	264.16	264.10	262.89	262.24	263.92	264.21	262.57	263.53	264.43	265.19	263.38
49-96-III	265.32	265.18	265.09	264.00	265.05	265.18	263.63	262.68	264.36	265.26	264.12	262.36	265.15	264.98	263.53	262.60	264.82	264.60	263.66	264.32	265.38	265.15	263.94
53-98	255.61	255.19	255.15	254.78	255.06	255.16	254.23	254.15	254.84	255.18	254.42	253.63	253.89	254.94	254.13	254.06	254.76	255.22	254.34	254.60	255.21	255.13	254.36
54-98	259.79	259.45	259.53	259.13	259.47	259.40	260.66	258.46	frozen	259.91	-	257.77	259.50	259.45	258.57	258.09	259.38	259.66	259.14	259.21	259.68	259.51	
55-98-I	264.01	263.78	263.74	262.96	263.66	263.82	262.56	262.07	264.49	263.89	263.07	261.62	263.71	263.60	262.49	262.04	263.34	263.71	262.88	263.04	263.85	263.84	262.91
55-98-II	256.17	256.60	256.28	256.24	256.45	256.33	256.30	256.37	256.30	256.17	256.30	256.09	256.06	256.23	-	256.04	255.74	255.56	255.15	255.45	256.10	255.65	256.35
56-02-I	264.12	263.89	263.77	263.17	263.94	263.26	264.50	264.50	frozen	263.61	-	261.60	263.97	263.75	262.59	261.97	263.71	264.10	263.40	263.31	264.05	263.93	263.19
56-02-II	263.62	263.68	263.23	262.86	263.56	263.49	264.46	264.46	263.12	263.55	-	260.01	263.45	263.37	262.01	260.60	264.14	263.54	261.91	262.66	263.50	263.50	262.46
57-02-I	253.95	253.96	253.74	253.51	253.76	253.79	253.38	253.57	254.09	254.75	254.21	253.61	253.31	254.36	253.44	253.52	255.68	254.09	253.52	253.46		254.04	253.80
57-02-II	254.28	254.26	254.07	253.76	254.65	254.15	253.55	253.78	253.83	255.03	254.22	253.72	253.69	254.71	253.28	253.71	253.60	254.69	253.97	253.75		254.70	254.18
58-02	254.12	253.97	253.83	253.75	253.86	253.91	252.88	253.63	253.94	254.90	253.93	253.44	254.72	254.64	253.36	253.62	254.36	254.58	253.66	253.52	254.61	254.60	253.62
59-05	250.43	250.78	250.72	250.43	250.41	250.70	250.49	250.43	frozen	250.63	250.29	250.04	250.20	250.19	249.93	250.30	249.76	250.02	250.15	250.37	250.41	250.55	250.33
60-05	249.54	249.46	249.50	249.41	249.45	249.52	249.36	249.30	frozen	249.50	248.97	249.15	249.30	249.26	248.41	249.28	249.20	249.34	249.36	249.35	249.41	249.38	249.25
61-10-I	254.19	254.18	254.06	253.90	253.75	254.05	253.49	253.53	254.78	254.19	253.83	253.13	253.65	253.74	253.18	253.25	250.57	250.77	250.32	250.75	252.10	252.28	252.09
61-10-II	254.30	254.23	254.13	254.01	253.85	254.31	253.58	253.71	254.92	254.34	253.85	253.21	253.86	253.93	253.25	253.36	251.43	252.20	251.92	252.08	253.21	253.35	252.99
61-10-III					255.98	254.16	253.60	253.64	254.84	254.21	253.81	-	-	-	-	-							
61-17-I																	250.56	250.94	243.48	250.76	252.11	252.27	252.11
62-17-I					256.19	246.46	244.45	247.77	247.45	248.89	244.80	247.07	245.82	247.93	243.63	245.28	247.85	248.16	250.74	245.48	246.57	252.83	251.22
62-17-II					256.20	254.14	253.56	253.53	254.15	254.16	253.75	253.07	253.55	254.01	253.18	253.19	249.19	249.24	249.04	249.21	251.11	251.24	251.23
62-17-III					256.17	254.46	253.54	253.92	253.67	254.60	253.77	253.00	253.83	253.62	253.21	253.34	251.83	252.62	253.56	252.06	253.48	253.57	253.27

Table D-1: Groundwater Level Elevations (mASL) (2004-2024)
Lindsay-Ops Landfill Site

Monitor No.	25-Oct-22	10-Feb-23	1-May-23	12-Jul-23	17-Oct-23	7-Feb-24	6-May-24	8-Jul-24	15-Oct-24
6-90-II	256.36	256.42	256.74	256.63	256.50	256.50	258.00	256.37	NA
7-90	259.22	259.66	259.95	259.62	259.29	259.59	259.72	259.48	259.26
7-90-II	263.91	263.07	262.69	262.43	273.82	262.55	261.80	263.37	261.42
11-90	253.38		253.96	253.33	253.29	253.85	253.81	NA	253.26
12-91-I	260.84	261.76	261.61	261.12	261.07	261.41	261.33	261.18	260.97
12-91-II	260.89	261.94	261.62	261.10	261.08	261.37	261.25	261.15	261.06
13-91-I	259.31	260.42	260.52	259.78	259.64	260.29	260.28	259.83	259.88
13-91-II	258.20	259.19	259.32	258.42	258.29	258.84	259.23	260.66	258.58
14-07	255.89	257.10	256.69	255.91	255.93	256.31	256.35	255.98	255.90
15-91-I	253.81	254.92	254.59	254.58	254.56	254.62	254.16	254.42	253.80
15-91-II	254.76	255.28	255.40	255.11	255.02	255.39	255.49	255.20	255.05
16-91-I	252.59	253.54	253.16	253.43	253.31	NA	253.25	NA	253.21
16-91-II	252.93	253.36	253.38	253.24	253.17	253.36	254.94	253.77	253.17
17-91-I	254.91	255.93	255.79	256.38	255.38	255.89	255.96	255.57	255.29
17-91-II	255.16	256.20	256.18	255.51	255.51	256.13	256.18	255.72	255.47
18-91	255.00	255.86	255.82	255.22	255.32	255.77	255.76	255.34	255.01
19-91	254.54	255.62	255.39	255.04	255.02	255.46	255.53	255.22	254.87
20-91-I	251.94	252.47	252.55	252.37	252.26	252.45	252.82	252.49	252.30
20-91-II	251.15	253.55	252.18	253.18	253.09	253.30	253.80	253.22	252.77
20-91-III	251.16	253.56	252.18	253.18	253.07	253.30	253.81	255.21	252.77
21-91-I	251.89	252.45	252.54	252.62	252.22	252.44	244.49	249.83	252.78
21-91-II	250.27	250.39	251.69	249.81	252.01	251.72	249.07	249.82	252.07
21-91-III	251.11	253.55	252.14	253.21	253.03	253.28	253.77	253.25	252.25
23-07	255.75	256.60	256.48	255.92	255.94	256.28	256.31	255.99	255.90
24-91	254.19	257.66	255.30	254.96	254.91	257.66	255.30	255.21	254.77
25-91	257.85	259.22	259.06	258.26	258.60	259.07	259.04	258.30	258.72
25-96	254.45	255.40	255.28	254.72	254.76	254.81	254.95	254.79	254.49
27-93	254.84	255.96	255.81	255.35	255.34	255.88	255.93	255.53	255.21
28-93	255.81	255.89	256.07	255.92	255.95	255.99	256.20	255.87	256.07
29-93	257.10	258.18	258.19	257.23	257.49	257.92	257.94	257.23	257.54
30-93	249.31	249.32	249.44	249.37	249.26	249.26	249.50	249.50	249.26
31-93	248.58	248.76	248.73	248.64	248.57	248.80	248.77	248.51	248.54
32-93-I	262.16	262.48	262.48	262.18	262.48	262.48	261.49	NA	262.22
32-93-II		261.59	261.53	261.00	261.11	261.52	262.50	NA	261.06
32-93-III	260.76	261.56	261.57	260.95	261.10	261.59	261.16	NA	261.03
35-93-I	256.07	257.85	256.89	256.15	256.18	256.62	256.53	256.14	256.14
35-93-II	256.14	258.32	256.96	256.12	256.15	256.74	256.58	256.27	256.21
36-93	256.80	257.79	257.71	256.86	257.12	257.56	257.53	NA	256.70
37-93-I	257.02	257.73	258.01	257.20	257.30	257.70	257.71	257.39	257.36
37-93-II	257.02	257.39	258.02	257.15	257.64	258.04	257.97	257.60	257.59
38-93	257.26	258.46	258.42	257.55	257.74	258.33	258.32	257.97	257.90
39-93-I	257.15	248.20	258.01	257.38	257.51	257.69	257.69	257.54	257.42
39-93-II	257.70	258.82	259.04	258.21	258.27	259.06	258.98	258.22	258.49
43-93-I	259.46	260.19	260.21	259.56	259.69	260.04	260.03	NA	260.10
43-93-II	259.42	260.49	260.37	259.75	260.13	260.18	260.20	NA	259.87
44-93-I	261.86	262.04	263.33	262.37	262.28	263.19	263.06	NA	262.38
44-93-II	261.22	262.41	262.90	261.78	261.71	262.51	262.82	NA	261.69
45-93	262.68	265.41	265.72	263.78	263.07	265.33	265.55	NA	263.42
45-95-I	249.75	250.48	250.23	249.73	249.77	250.08	250.06	NA	249.68
45-95-II	249.86	250.50	250.22	249.78	249.78	250.06	250.06	NA	249.83
46-95-I	250.45	250.62	250.63	250.54	250.51	250.52	250.83	250.62	250.45
46-95-II	250.50	250.71	250.74	250.66	250.54	250.56	251.04	250.71	250.57
47-96-I	252.08	252.76	252.43	252.78	252.63	252.69	253.35	252.89	252.48
47-96-II	252.70	252.73	252.83	252.80	252.67	252.71	253.40	252.93	252.42
48-96-I	252.11	252.97	252.66	252.94	252.82	253.07	253.37	253.17	252.79
48-96-II	252.12	253.13	252.65	252.95	252.78	253.05	253.47	253.18	252.68
49-96-I	262.39	263.91	264.00	262.99	262.84	263.80	263.87	263.57	262.90
49-96-II	262.74	264.53	264.53	263.37	263.15	264.38	264.37	264.23	263.49
49-96-III	263.04	265.38	265.39	264.09	263.69	265.23	265.04	264.83	264.07
53-98	254.08	255.35	255.27	254.42	254.54	255.09	255.07	NA	254.74
54-98	258.75	259.96	259.92	259.19	259.33	259.78	260.06	259.34	259.36
55-98-I	262.30	264.01	264.08	262.96	262.85	263.81	265.73	NA	263.05
55-98-II	252.65	255.95	256.27	256.09	256.05	256.01	256.25	NA	256.11
56-02-I	262.58	264.16	264.21	263.16	263.10	263.91	263.94	NA	263.39
56-02-II	261.45	263.53	263.52	262.59	262.32	263.48	263.47	263.05	262.78
57-02-I	Destroyed								
57-02-II	253.52	254.58	254.63	253.28	253.23	254.32	254.56	NA	253.28
58-02	253.60	254.64	254.63	253.87	253.70	254.60	254.59	NA	253.70
59-05	250.39	250.50	250.58	250.44	250.44	250.41	250.63	NA	250.37
60-05	249.30	249.50	249.43	249.17	249.22	249.45	249.36	NA	249.12
61-10-I	251.84	253.61	252.72	253.28	253.06	253.47	253.78	NA	252.88
61-10-II	252.54	253.94	253.53	253.57	253.35	253.82	254.05	NA	253.21
61-10-III		255.98	255.98	255.98					
61-17-I	251.84	253.62	252.72	253.29	253.06	NA	253.79	NA	252.88
62-17-I	250.77	253.20	252.01	252.35	252.32	254.17	253.79	NA	252.72
62-17-II	251.00	253.49	252.08	253.18	252.93	253.26	253.77	NA	252.69
62-17-III	252.57	254.18	253.80	253.14	253.63	254.15	254.38	NA	253.34

TECHNICAL MEMORANDUM

DATE November 18, 2024 **Project No.** CA0034417.8221

TO Kayla Pantaleo
City of Kawartha Lakes

CC

FROM Santosh Rimal, Frank Barone **EMAIL santosh.rimal@wsp.com**

LINDSAY OPS LANDFILL VIBRATING WIRE PIEZOMETER LEACHATE HEAD AND LINER TEMPERATURE MONITORING (2024)

Attached are updated plots of measured leachate head and temperature on the surface of the geomembrane liner at the Lindsay Ops Landfill in 2024. The following table provides a summary of Vibrating Wire Piezometer (VWP) monitoring:

Vibrating Wire Piezometer	Location	Figure Number	Average Leachate Head in 2024 (m)	Average Geomembrane Liner Surface Temperature in 2024 (°C)	Remarks
VWP 02-1	Cell 1	A-1	<0.01	20.1	Data updated for 2024. Monitored six (6) times in 2024. Meets ECA requirement of monitoring three (3) times per year.
VWP 04-1	Cell 2 (East Side)	A-2	Not operational	Not operational	The piezometer cable got buried and could not be located since June 2019.
VWP 04-2	Cell 2 (West Side)	A-3	Not operational	Not operational	Has not been operational since mid-2012.
VWP 12-1	Cells 3 and 6 (West Side)	A-4	<0.01	20.1	Data updated for 2024. Monitored six (6) times in 2024. Meets ECA requirement of monitoring three (3) times per year.
VWP 12-2	Cells 3 and 6 (East Side)	A-5	<0.01	13.5	Data updated for 2024. Monitored three (3) times in 2024. Meets ECA requirement of monitoring three (3) times per year.

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WSP Canada Inc.



Santosh Rimal, Ph.D., P.Eng.
Geotechnical Engineer



Frank Barone, Ph.D., P.Eng.
Principal

SR/FSB/sr

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Figure A-1: Vibrating Wire Piezometer Pressure Head and Temperature Monitoring, Cell 1 (VWP 02-1)
Lindsay-Ops Landfill Site, City of Kawartha Lakes, ON

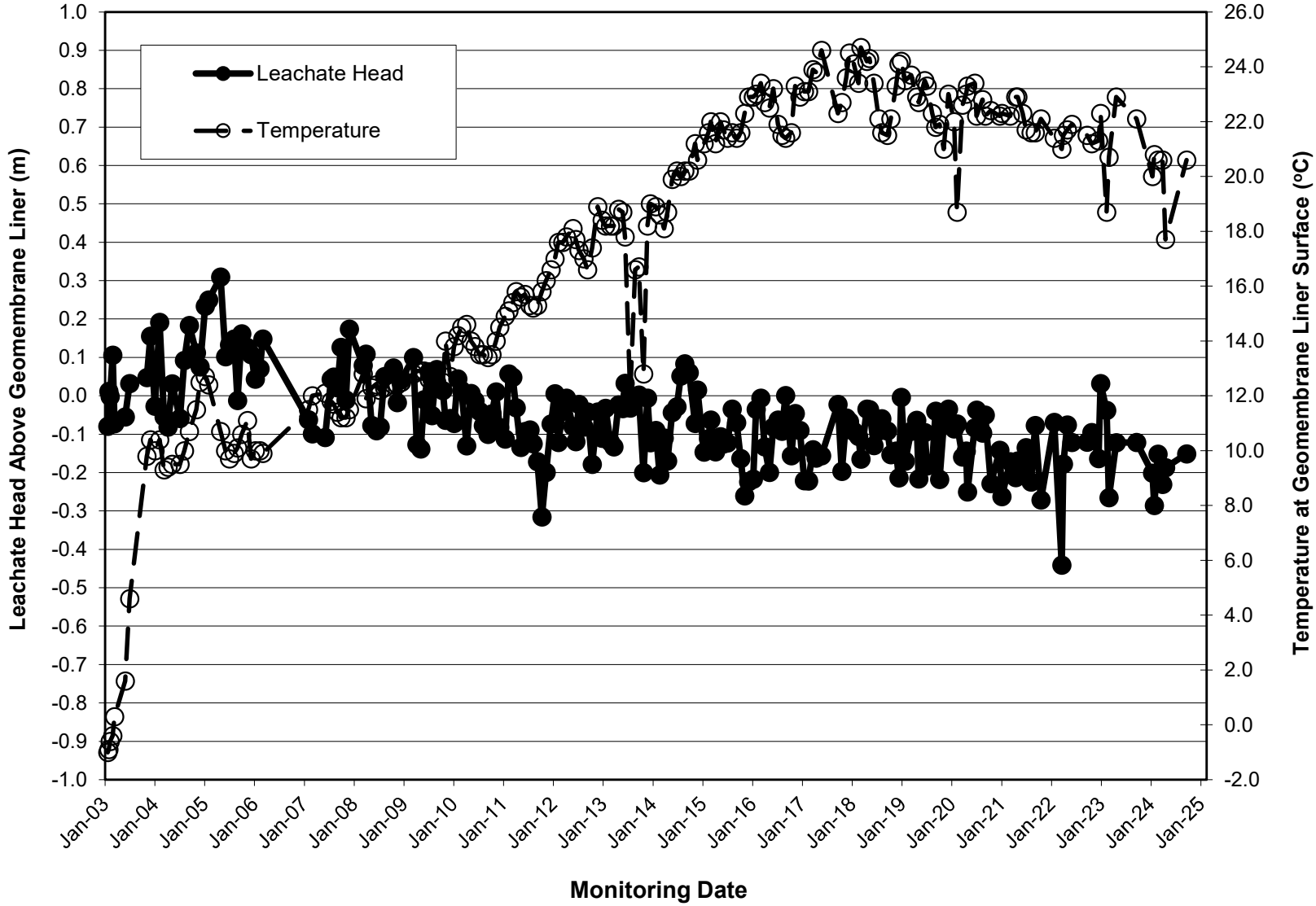


Figure A-2: Vibrating Wire Piezometer Pressure Head and Temperature Monitoring, East Side Cell 2 (VWP 04-1) Lindsay-Ops Landfill Site, City of Kawartha Lakes, ON

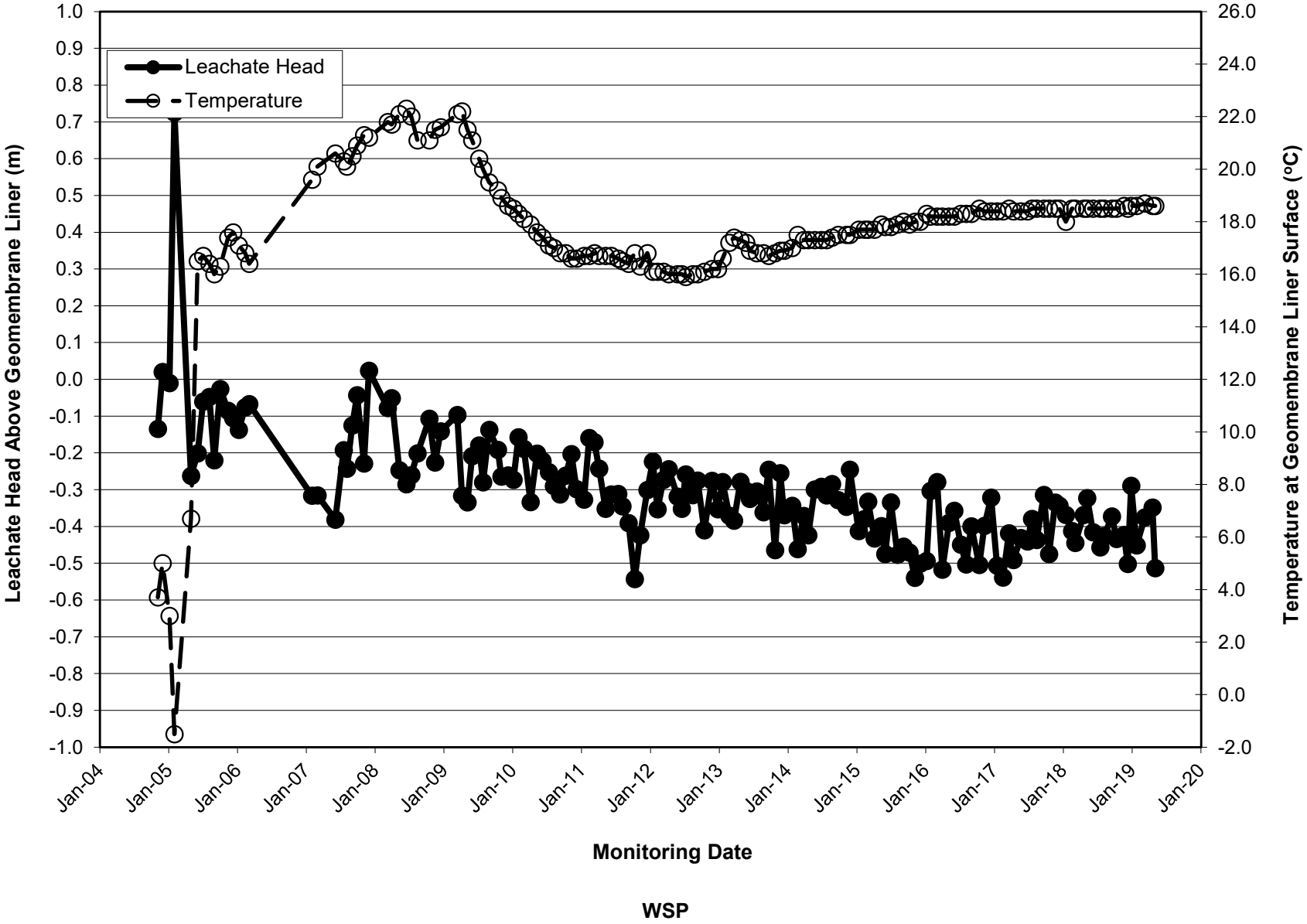


Figure A-3: Vibrating Wire Piezometer Pressure Head and Temperature Monitoring, West Side Cell 2 (VWP 04-2) Lindsay-Ops Landfill Site, City of Kawartha Lakes, ON

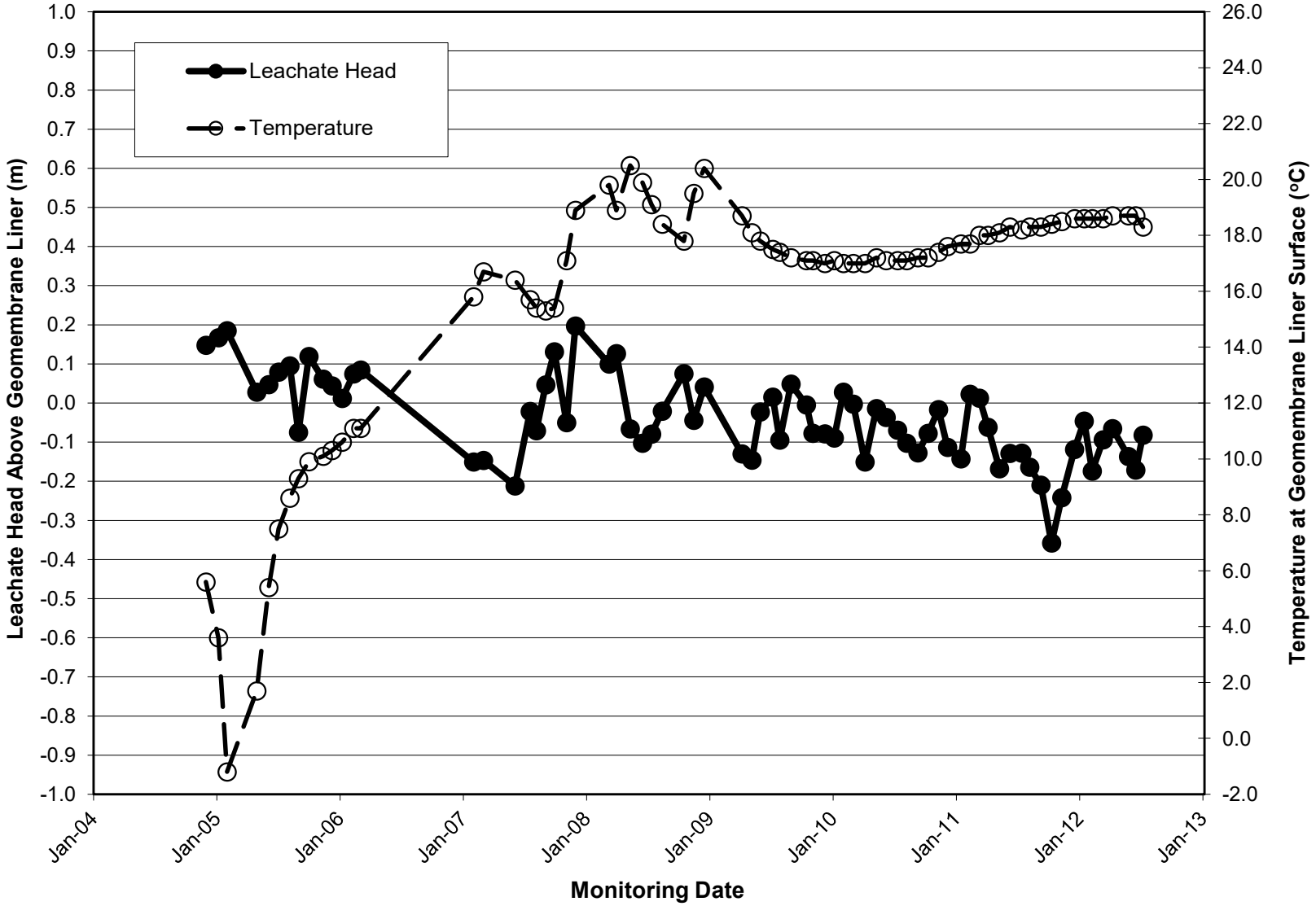


Figure A-4: Vibrating Wire Piezometer Pressure Head and Temperature Monitoring, West Side Cell 3/6 (VWP 12-1) Lindsay-Ops Landfill Site, City of Kawartha Lakes, ON

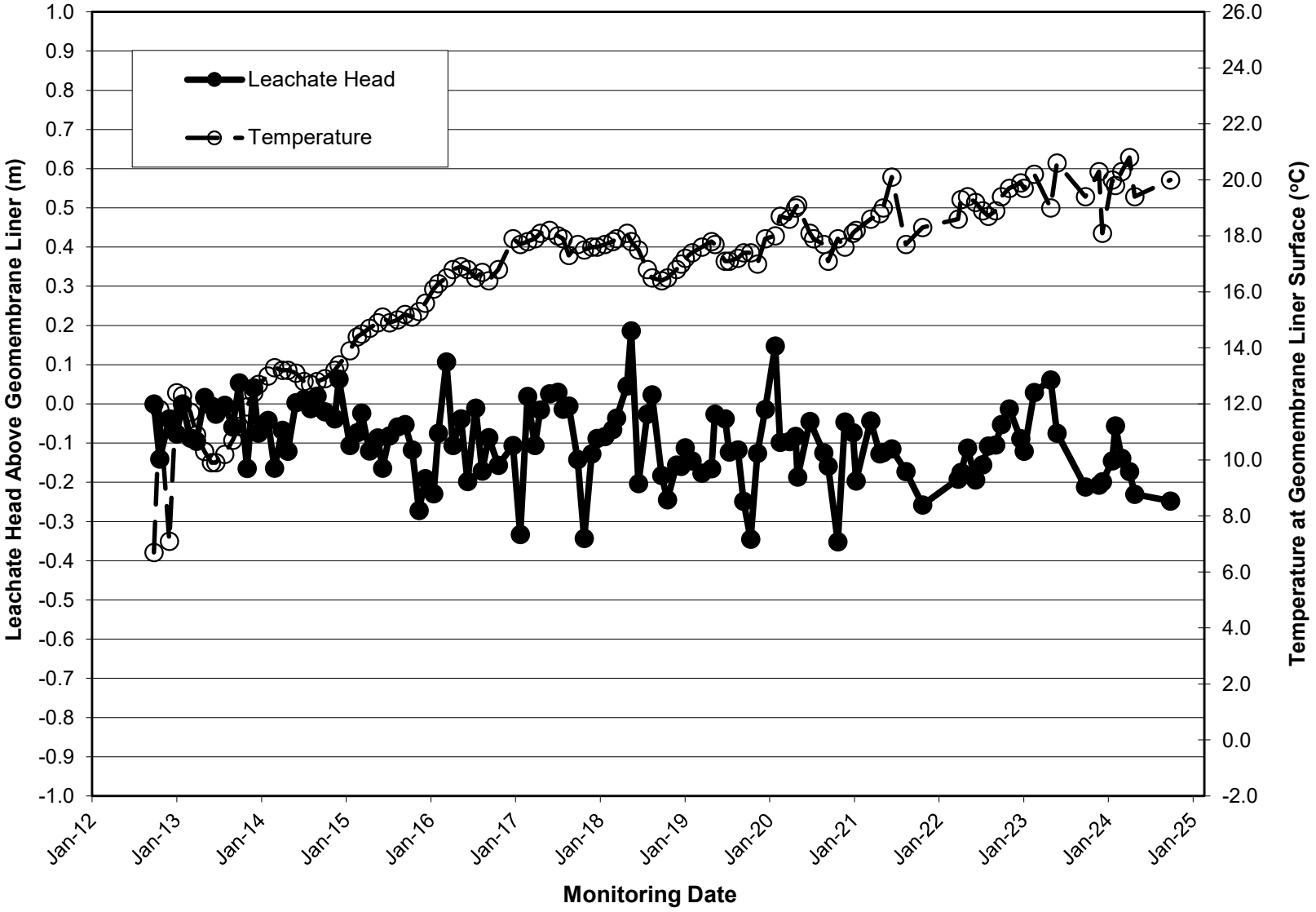
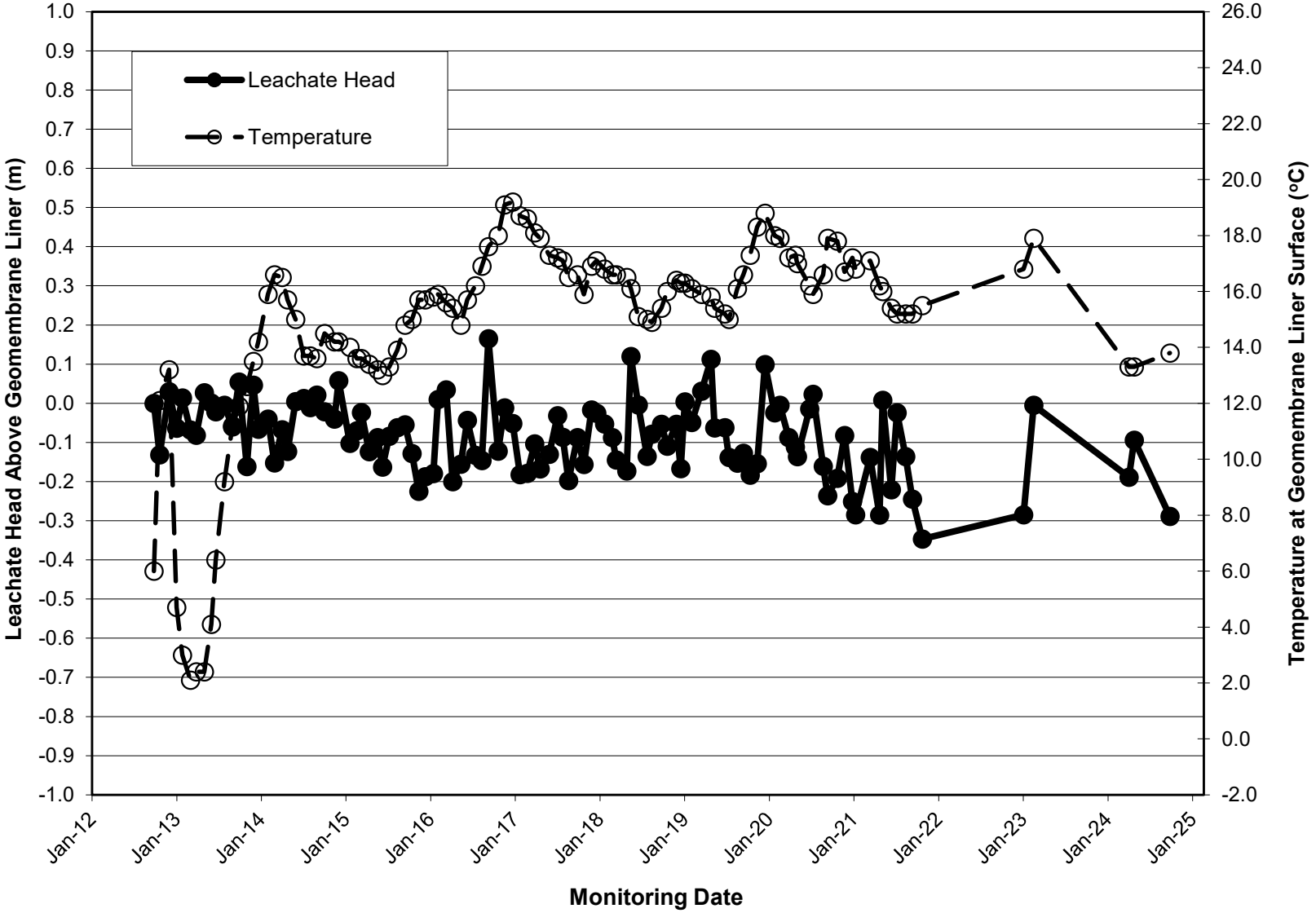


Figure A-5: Vibrating Wire Piezometer Pressure Head and Temperature Monitoring, East Side Cell 3/6 (VWP 12-2) Lindsay-Ops Landfill Site, City of Kawartha Lakes, ON



APPENDIX E

Ground Water & Leachate Quality Summary Tables

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	6-90-II 16-May-16	6-90-II 23-May-17	6-90-II 12-Nov-19	6-90-II 3-May-22	6-90-II 2-May-23	6-90-II 18-Oct-23	6-90-II 6-May-24	6-90-II 16-Oct-24	7-90 5-May-20	7-90 13-Oct-20	7-90 4-May-21	7-90 13-Oct-21	7-90 3-May-22	7-90 25-Oct-22	7-90 2-May-23	7-90 18-Oct-23	7-90 6-May-24	7-90 16-Oct-24
Alkalinity	mg/L	500	**4660**	**4750**	**3600**	**2740**	Dry	Dry	**2780**	Damaged	**4100**	**6720**	**5670**	**5730**	**3590**	**6280**	**5200**	**6500**	**5850**	**6050**
Unionized Ammonia	mg/L	N/A	0.94	2.69	0.79	1.64			0.89		1.38	0.02		3.25	1.39	0.46	1.56	0.05	1.47	3.82
Ammonia	mg/L	N/A	622	645	695	401			568		366	543	510	511	441	709	451	579	591	740
BOD	mg/L	N/A	>20	91	141	18			16		16	18	19	14	19	21	17		40	18
Calcium	mg/L	N/A	114	55.3	85.5	128			150		201	132	159	141	40.3	115	100	111	113	591
COD	mg/L	N/A	997	1420	9000	3170			1090		1790	1530	1610	1450	985	1220	1340	1080	1210	1300
Chloride	mg/L	250	**1210**	**971**	**1350**	**547**			**818**		**922**	**1050**	**909**	**529**	**775**	**1290**	**957**	**1250**	**1020**	**986**
Conductivity	umhos/cm	N/A	11400	11700	9730	6860			8680		9570	13200	11700	12500	10400	13200	11300	13400	12200	14100
Cyanide	mg/L	0.2	< 0.01	< 0.005	< 0.005	< 0.005			<0.008		< 0.005	< 0.005	< 0.03	< 0.005	< 0.005	0.005	< 0.005		<0.085	<0.034
DOC	mg/L	5	**273**	**155**	**96.6**	**68.1**			**176**		**101**	**105**	**121**	< 0.2	**91.9**	**130**	**61.4**	**208**	**223**	**293**
Fluoride	mg/L	1.5	< 1	< 0.5	< 3	< 1			<0.7		< 3	< 3	< 5	< 5	< 1	< 3	< 1	<0.1	<0.7	<7.0
Hardness	mg/L	500	**1430**	**1280**	**1260**	**908**			**1260**		**1070**	**1290**	**1080**	**1200**	421	**1250**	**886**	**1110**	**1100**	**2560**
Ion Balance	%	N/A				0.00199			1.35		3.55	7.34	2.25	11.3	11	5.69	11.4	11.8	2.56	4.4
Iron	mg/L	0.3	**2.44**	**1.09**	**0.453**	**0.377**			**1.11**		**5.16**	**8.78**	**11**	**2.05**	**0.347**	**2.1**	**1.25**	**4.05**	**1.85**	**31.3**
Magnesium	mg/L	N/A	279	278	255	143			217		139	234	167	205	77.9	235	155	203	198	264
Manganese	mg/L	0.05	**0.104**	0.029	**0.067**	**0.14**			**0.198**		**0.256**	**0.17**	**0.314**	**0.152**	**0.073**	**0.143**	**0.19**	**0.15**	**0.149**	**0.876**
Nitrate	mg/L	10	< 1	< 0.3	< 1	0.91			<0.40		2.08	< 1	< 3	< 3	0.91	< 1	< 0.5	<0.05	<0.40	<4.00
Nitrite	mg/L	1	< 1	0.4	< 1	< 0.5			<0.40		< 1	< 1	< 3	< 3	< 0.5	< 1	< 0.5	<0.05	<0.40	<4.00
Tot Kjel N	mg/L	N/A	733	686	864	461			566		377	669	446	782	485	709	507	578	575	692
pH-Lab	pH unit	6.5-8.5	7.57	7.51	7.68	7.49			7.79		7.67	7.59	7.87	7.56	7.4	7.44	7.43	7.76	8.01	7.74
Phenols	mg/L	N/A	0.015	0.226	0.027	0.007			0.025		0.03	0.028	0.169	0.052	0.022	0.029	0.029	<0.005	0.024	0.019
Phosphorus	mg/L	N/A	1.2	0.2	0.3	< 0.1			0.1		1.4	2.9	2	0.3	0.1	0.5	0.2	1.6	0.5	4.9
Potassium	mg/L	N/A	387	378	311	171			286		264	376	279	358	119	361	249	326	338	371
Sodium	mg/L	200	**1100**	**1170**	**1030**	**459**			**778**		**1460**	**2430**	**1730**	**2150**	**1650**	**2240**	**1840**	**2290**	**1880**	**2550**
Sulphate	mg/L	500	23	28	< 30	15			21		70	< 30	64	< 50	< 10	< 30	< 10	<1	19	<15
TDS	mg/L	500	**6710**	**6560**	**6081**	**3627**			**4980**		**5993**	**8266**	**7494**	**7481**	**5432**	**8929**	**6415**	**7810**	**7040**	**8200**
TSS	mg/L	N/A	650	280	26000	102000			2100		23200	9600	6920	219000	9400	21700	2170	1140	15500	3560
Turbidity	NTU	N/A	192	450	1700	18200			3690		9020	11600	24400	31600	4190	3190	2180	884	7820	4130
Colour	TCU	5	**454**	**350**	**187**	**138**			**227**		**310**	**518**	**410**	**533**	**296**	**433**	**377**	**465**	**810**	**638**
Aluminum	mg/L	0.1	< 0.05	0.03	0.08	0.06			0.06		**0.11**	**0.12**	0.1	0.06	0.04	0.07	0.07	**0.7**	0.09	7
Antimony	mg/L	0.006	0.0013	**0.0104**	0.0014	0.0036			0.0012		0.0027	0.0025	0.0021	0.0037	0.0025	0.0043	0.0022	0.0034	0.0024	0.0039
Arsenic	mg/L	0.025	**0.0565**	**0.029**	0.0093	0.005			0.0029		0.0044	0.0047	0.0045	0.0086	0.0041	**0.0255**	0.004	0.0084	0.0062	0.0147
Barium	mg/L	1	**1.59**	0.255	0.7	**1.18**			**1.71**		0.603	0.744	0.587	0.398	0.09	0.312	0.213	0.48	0.337	**1.23**
Beryllium	mg/L	N/A	< 0.02	< 0.002	< 0.002	< 0.002			<0.0001		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0005	<0.0001	0.0005
Boron	mg/L	5	**5.88**	**5.87**	**6.42**	**5.49**			**6.83**		3.36	4.15	3.07	4.28	1.39	3.89	2.99	3.93	4.08	
Cadmium	mg/L	0.005	< 0.00002	< 0.000014	< 0.00012	< 0.000059			<0.000030		< 0.00012	< 0.00012	< 0.00012	< 0.00012	0.000174	0.00148	< 0.00012	<0.000590	<0.000059	0.00088
Chromium	mg/L	0.05	< 0.0002	< 0.001	0.008	< 0.001			0.008		0.044	**0.07**	0.05	0.039	0.009	0.044	0.021	**0.071**	0.032	**0.079**
Cobalt	mg/L	N/A	< 0.05	0.017	0.017	0.007			0.0128		0.0126	0.016	0.013	0.019	< 0.005	0.024	0.011	0.0208	0.0161	0.0242
Copper	mg/L	1	0.005	0.0105	0.0012	0.0004			0.0002		< 0.0006	0.0025	0.0007	0.0018	0.002	0.143	0.0008	0.0433	0.0023	0.0489
Lead	mg/L	0.01	0.00006	0.0001	< 0.0004	0.0013			0.0002		< 0.0004	0.00053	< 0.0004	0.00485	0.00354	**0.33**	0.00047	**0.0658**	0.00362	**0.15**
Mercury	mg/L	0.001	< 0.00002	< 0.00002	0.00004	< 0.00002			<0.00002		< 0.00002	< 0.00002	< 0.00002	0.00005	< 0.00002	0.00008	< 0.00002	<0.00002	<0.00002	0.00008
Molybdenum	mg/L	N/A	0.0056	0.0026	0.0139	0.0236			0.0024		0.0015	0.0024	0.0018	0.0152	0.0037	0.0075	0.0019	0.0092	0.0041	0.0048
Nickel	mg/L	N/A	< 0.1	0.07	0.08	0.02			0.0396		0.07	0.09	0.07	0.1	0.02	0.11	0.04	0.0992	0.0742	0.104
Selenium	mg/L	0.01	**0.025**	**0.011**	**0.012**	<0.02			<0.001		0.005	0.006	**0.012**	<0.02	<0.02	<0.02	< 0.004	<0.021	<0.002	<0.001
Silver	mg/L	N/A	< 0.00002	0.00003	0.0008	< 0.0002			<0.0001		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	<0.0023	<0.0002	<0.0001
Strontium	mg/L	N/A	1.16	0.762	1.27	1.29			1.54		1.09	1.05	0.967	0.952	0.355	0.8	0.697	0.765	0.783	1.47
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00008	< 0.00005			<0.00005		0.00018	0.00029	< 0.00008	0.00009	< 0.00008	0.0005	< 0.00008	0.0004	<0.00005	0.00016
Vanadium	mg/L	N/A	0.0157	0.0314	0.0051	0.0039			0.0017		0.0053	0.0077	0.0061	0.0099	0.0046	0.0532	0.0061	0.0159	0.0069	0.0225
Zinc	mg/L	5	< 0.05	< 0.005	0.026	0.006			<0.005		< 0.005	< 0.005	0.006	0.013	< 0.005	0.054	0.009	0.049	0.019	0.454

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	7-90-II 18-May-16	7-90-II 18-Oct-16	7-90-II 8-May-18	7-90-II 8-May-19	7-90-II 8-Oct-19	7-90-II 2-May-23	7-90-II 18-Oct-23	7-90-II 6-May-24	7-90-II 16-Oct-24	11-90 29-May-15	11-90 13-Jul-15	11-90 13-Oct-15	11-90 17-May-16	11-90 13-Jul-16	11-90 12-Oct-16	11-90 25-May-17	11-90 20-Jul-17	11-90 18-Oct-17
Alkalinity	mg/L	500	**6920**	**6740**	**6030**	**6090**	**6260**	Dry	Dry	**6680**	**6660**	309	310	320	316	316	291	320	316	304
Unionized Ammonia	mg/L	N/A	2.23	7.59	26.5	7.59	11.1			7.05	14.6				< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ammonia	mg/L	N/A	1160	1000	1130	1140	1210			1500	1720	0.2	0.28	0.19	0.2	0.24	0.29	0.38	0.36	0.27
BOD	mg/L	N/A	>20	88	48	49	43			19	20	5		4	2	< 3	< 3	< 3	< 3	< 3
Calcium	mg/L	N/A	97.6	106	124	107	107			102	118	131	148	152	136	129	118	143	146	138
COD	mg/L	N/A	1530	1600	351	2040	1940			1930	1740	6	< 5	5	9	6	< 5	9	< 5	5
Chloride	mg/L	250	**2380**	**2220**	**2260**	9.7	**1190**			**2120**	**1860**	104	119	123	117	135	101	108	113	92.8
Conductivity	umhos/cm	N/A	17800	17600	16100	16400	16000			17000	16900	936	1010	1030	1000	1070	959	1080	1070	1010
Cyanide	mg/L	0.2	0.014	0.006	0.011	0.009	0.005			<0.017	<0.034	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	**315**	**312**	**427**	**265**	**243**			**536**	**531**	1.1	1.1	1.1	2	1.8	1.9	2.9	3.1	2.3
Fluoride	mg/L	1.5	< 10	< 10	< 10	< 0.1	<10			<1.8	<7.0	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	< 0.1
Hardness	mg/L	500	**1130**	**1110**	**1120**	**1170**	**1280**			**1180**	**1240**	444	498	**527**	473	447	414	483	493	472
Ion Balance	%	N/A								0.374	7.9									
Iron	mg/L	0.3	**3.92**	**3.91**	**8.8**	**9.33**	**3.49**			**3.86**	**6.21**	**0.355**	**0.615**	**0.932**	**1.39**	**1.13**	**0.768**	**0.548**	**0.634**	**0.569**
Magnesium	mg/L	N/A	215	206	198	219	246			224	229	28.6	31.2	36	32.2	30.5	29	30.7	31.6	30.8
Manganese	mg/L	0.05	**0.175**	**0.173**	**0.253**	**0.216**	**0.2**			**0.243**	**0.267**	**0.069**	**0.073**	**0.119**	**0.132**	**0.104**	**0.094**	0.041	0.041	0.032
Nitrate	mg/L	10	< 10	< 10	< 5	< 0.05	< 5			<1.00	<4.00	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	< 10	< 10	< 5	< 0.05	< 5			**1.14**	<4.00	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	1430	1410	1180	1260	1150			1130	1530	0.3	1.3	0.5	0.4	0.5	0.4	0.5	0.6	0.4
pH-Lab	pH unit	6.5-8.5	7.75	7.76	7.69	7.51	7.88			8.02	7.7	7.76	7.57	7.56	8.06	7.48	8.12	7.69	7.64	8.04
Phenols	mg/L	N/A	< 0.001	0.034	0.024	< 0.002	0.019			0.06	0.016	< 0.001	< 0.001	< 0.001	< 0.001	0.051	< 0.001	< 0.001	< 0.001	0.001
Phosphorus	mg/L	N/A	< 10	3.7	3	2.2	4.9			3	3.6	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	529	537	629	592	635			592	592	3	3.5	3.3	3.6	3.8	3.4	4.3	4.6	4.5
Sodium	mg/L	200	**1960**	**1880**	**1890**	**1850**	**1910**			**1820**	**1840**	16.9	19	19.3	26.9	45	39.2	23.4	23.6	20.1
Sulphate	mg/L	500	< 100	< 100	< 100	< 1	< 100			21	<15	31	31	31	27	30	54	27	26	21
TDS	mg/L	500	**10800**	**10300**	**10185**	**7914**	**544**			**10000**	**9900**	500	**539**	**558**	**535**	**565**	**521**	**530**	**535**	491
TSS	mg/L	N/A	1100	195	2000	440	950			400	180	150	6	88	46	4	7	12	5	< 3
Turbidity	NTU	N/A	903	146	407	415	1030			125	116	32.6	6.5	21.1	22.2	14.3	14	19.7	5.9	3.3
Colour	TCU	5	**880**	**890**	**875**	**1200**	**10213**			**862**	**1170**	**10**	7	2	< 2	**10**	< 2	2	2	3
Aluminum	mg/L	0.1	< 0.5	**0.27**	**1.18**	**0.16**	**0.14**			0.09	**0.68**	0.03	0.04	0.03	0.03	0.03	0.03	0.04	0.05	0.06
Antimony	mg/L	0.006	0.0004	**0.0091**	**0.356**	**0.0103**	0.0041			0.0048	0.0057	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0016	**0.0346**	0.015	0.0247	0.0117			**0.0358**	**0.0269**	0.0004	0.0005	0.0006	0.0007	0.0003	0.0005	0.0006	0.0005	0.0006
Barium	mg/L	1	0.256	0.242	0.317	0.295	0.31			0.273	0.353	0.224	0.263	0.3	0.296	0.287	0.365	0.302	0.349	0.284
Beryllium	mg/L	N/A	< 0.2	< 0.002	< 0.002	< 0.002	< 0.02			<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	**9.3**	**14.6**	**15.4**	**18.3**	**23.4**			**20.3**		0.057	0.074	0.093	0.081	0.053	0.075	0.085	0.094	0.087
Cadmium	mg/L	0.005	< 0.00002	0.00005	< 0.00059	0.00135	< 0.00030			0.00008	0.000275	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000014
Chromium	mg/L	0.05	< 0.0002	< 0.0002	0.043	0.03	**0.06**			**0.053**	**0.059**	0.0043	< 0.0002	0.0048	0.002	< 0.0002	0.0008	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.5	0.048	0.0425	0.037	< 0.05			0.0296	0.0274	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0006	0.0131	0.0113	0.0414	< 0.002			0.0013	0.0055	< 0.0001	< 0.0001	0.0001	0.0003	0.0001	0.0002	0.0011	0.001	0.0005
Lead	mg/L	0.01	< 0.00002	0.00187	**0.286**	**0.0245**	< 0.0009			0.00195	0.00624	< 0.00002	0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00008	< 0.00002
Mercury	mg/L	0.001	< 0.00002	0.00003	0.00003	0.00005	0.00003			<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0005	0.0054	0.0073	0.0086	0.0033			0.0059	0.004	< 0.0001	< 0.0001	< 0.0001	0.0005	0.0003	0.0002	0.0002	0.0001	< 0.0001
Nickel	mg/L	N/A	< 1	0.15	0.16	0.15	0.16			0.146	0.132	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	0.001	**0.024**	< 0.02	**0.015**	0.01			<0.002	<0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.00002	0.00023	< 0.002	0.0006	< 0.001			<0.0002	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.873	1.03	1.11	1.2	1.51			1.37	1.49	1.07	1.29	1.28	1.3	1.19	1.52	1.24	1.34	1.12
Thallium	mg/L	N/A	< 0.00005	< 0.00005	0.0102	0.00067	0.00047			<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0026	0.0314	0.0146	0.0146	0.009			0.0109	0.0126	0.0024	0.0042	0.0016	0.0008	0.0005	0.0004	0.001	0.0017	0.0018
Zinc	mg/L	5	< 0.5	0.013	0.134	0.052	< 0.05			0.016	0.057	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.013

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	11-90 8-May-18	11-90 24-Jul-18	11-90 11-Oct-18	11-90 9-May-19	11-90 16-Jul-19	11-90 9-Oct-19	11-90 5-May-20	11-90 13-Jul-20	11-90 13-Oct-20	11-90 4-May-21	11-90 5-Jul-21	11-90 13-Oct-21	11-90 3-May-22	11-90 26-Jul-22	11-90 25-Oct-22	11-90 2-May-23	11-90 12-Jul-23	11-90 18-Oct-23
Alkalinity	mg/L	500	310	281	284	300	281	280	318	299	295	328	328	286	310	321	362	378	352	388
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01
Ammonia	mg/L	N/A	0.3	0.24	0.26	0.34	0.31	0.31	0.48	0.3	0.43	0.41	0.23	0.41	0.48	0.41	0.36	2.71	0.57	1.1
BOD	mg/L	N/A	< 3	< 2	3		< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	
Calcium	mg/L	N/A	151	138	145	159	159	159	160	152	135	155	163	158	170	162	188	142	113	102
COD	mg/L	N/A	23	9	9	12	9	< 5	26	23	9	9	7	10	23	9	11	16	15	23
Chloride	mg/L	250	142	146	141	168	161	167	161	143	124	234	236	227	178	183	193	175	122	124
Conductivity	umhos/cm	N/A	1020	1030	1060	1140	1080	1060	1170	1050	988	1420	1350	1230	1220	1170	1350	1270	1040	1060
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
DOC	mg/L	5	4.3	2.4	3.1	4.1	2.6	3.2	3.1	2.4	2.3	2.9	2	1.4	2.3	1.8	0.4	2.1	< 0.2	4.5
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 1	<0.1
Hardness	mg/L	500	**514**	471	491	**536**	**527**	**532**	**541**	**515**	476	**540**	**547**	**540**	**580**	**550**	**642**	**517**	409	393
Ion Balance	%	N/A							1.88	4.52	3.65	1.04	3.42	0.0816	3.96	2.29	6.57	5.23	6.35	8.63
Iron	mg/L	0.3	**0.314**	**0.332**	**0.452**	0.299	**0.7**	**0.62**	**0.686**	**1.55**	**1.12**	**4.39**	**5.27**	**2.29**	**0.805**	2	**10**	**8.4**	**6.99**	**1.69**
Magnesium	mg/L	N/A	33.1	30.7	31.2	33.6	31.4	32.8	34.3	32.8	33.5	37.1	33.9	35.2	37.9	35.3	41.9	39.2	30.9	33.6
Manganese	mg/L	0.05	0.03	0.03	0.0291	0.03	0.03	0.028	0.034	0.038	0.027	**0.097**	**0.065**	**0.051**	0.038	**0.064**	**0.112**	**0.131**	**0.101**	0.046
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05	0.19	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.5	<0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.12	< 0.05	0.17	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	<0.05
Tot Kjel N	mg/L	N/A	0.5	0.5	0.4	0.8	0.4	0.5	0.9	0.6	0.7	0.8	0.5	0.7	0.6	0.7	0.6	4.2	0.9	2.2
pH-Lab	pH unit	6.5-8.5	7.7	7.78	7.88	7.76	7.61	7.81	7.76	7.71	7.81	8.07	7.6	7.51	7.28	7.63	7.5	7.49	7.59	7.74
Phenols	mg/L	N/A	< 0.001	0.006	0.012	< 0.002	< 0.002	< 0.002	0.004	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	0.04	< 0.01	0.02	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1
Potassium	mg/L	N/A	4.8	4.3	4.2	5	4	4.4	5.6	4.8	4.7	4.2	3.7	4.1	4.1	4	4.2	3.4	3.3	3.3
Sodium	mg/L	200	25.3	21.5	20.7	30.8	20.6	22.2	26.3	25.4	24	44.9	42.8	40	26.3	34	46.5	88.4	88.5	45.4
Sulphate	mg/L	500	31	30	30	39	28	28	40	29	27	33	43	32	33	27	44	36	27	33
TDS	mg/L	500	**574**	**539**	**544**	**616**	**574**	**582**	**619**	**568**	**527**	**696**	**725**	**671**	**637**	**640**	**746**	**720**	**604**	**570**
TSS	mg/L	N/A	4	< 3	22		< 3	7	16	< 3	12	65	36	5	7	8	30	70	8	4
Turbidity	NTU	N/A	4.6	5.4	7.3		10	3.3	40.2	20.6	15.2	207	189	21.5	9.2	31.6	116	85.5	50.6	11.9
Colour	TCU	5	< 2	< 2	< 2		< 2	< 2	< 2	3	3	4	< 2	< 2	< 2	< 2	< 2	< 2	< 2	<2
Aluminum	mg/L	0.1	0.07	0.07	0.07	0.08	0.07	0.09	0.08	0.08	0.05	0.09	0.05	0.07	0.05	0.08	**0.11**	0.04	0.07	0.06
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0002	< 0.0001	< 0.0001	<0.0001
Barium	mg/L	1	0.302	0.269	0.277	0.358	0.281	0.282	0.318	0.272	0.232	0.272	0.255	0.253	0.284	0.263	0.327	0.323	0.295	0.282
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001
Boron	mg/L	5	0.099	0.085	0.086	0.104	0.091	0.098	0.115	0.106	0.113	0.093	0.098	0.095	0.107	0.092	0.031	0.09	0.092	0.094
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	< 0.000010	<0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001
Cobalt	mg/L	N/A	< 0.0001	0.009	< 0.0001	0.005	0.0002	< 0.005	< 0.0001	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002
Copper	mg/L	1	0.0008	0.0001	0.0004	0.0005	0.0004	< 0.0001	< 0.0001	0.0012	0.0046	0.0007	0.0001	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0007
Lead	mg/L	0.01	0.00007	< 0.00002	0.00003	0.00004	0.00004	< 0.00004	0.00006	0.0001	0.00003	0.00004	0.00008	< 0.00004	0.00002	< 0.00004	< 0.00004	< 0.00004	< 0.00002	<0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002
Molybdenum	mg/L	N/A	0.0001	< 0.0001	< 0.0001	0.0005	< 0.0001	< 0.0001	0.0003	0.0002	< 0.0001	0.0002	< 0.0001	< 0.0001	0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	<0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0009
Selenium	mg/L	0.01	< 0.001	0.004	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	0.001	0.002	0.002	0.002	0.001	< 0.001	0.001	<0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Strontium	mg/L	N/A	1.26	1.1	1.18	1.4	1.17	1.18	1.31	1.16	1.17	1.25	1.19	1.19	1.22	1.2	1.36	1.29	1.15	1.13
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	<0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	11-90 6-May-24	11-90 29-Jul-24	11-90 16-Oct-24	12-91-I 26-May-15	12-91-I 13-Oct-15	12-91-I 17-May-16	12-91-I 17-Oct-16	12-91-I 23-May-17	12-91-I 17-Oct-17	12-91-I 8-May-18	12-91-I 11-Oct-18	12-91-I 8-May-19	12-91-I 8-Oct-19	12-91-I 5-May-20	12-91-I 13-Oct-20	12-91-I 4-May-21	12-91-I 13-Oct-21	12-91-I 3-May-22
Alkalinity	mg/L	500	381	383	393	388	351	336	430	349	313	256	299	240	228	248	239	297	314	238
Unionized Ammonia	mg/L	N/A	<0.01	<0.01	<0.01															
Ammonia	mg/L	N/A	0.84	0.71	1.82	0.02	0.08	0.05	0.14	0.03	0.09	0.06	0.07	0.09	0.1	0.01	0.06	0.08	0.18	0.62
BOD	mg/L	N/A	<3	<3	<3															
Calcium	mg/L	N/A	121	143	126	119	116	100	147	132	102	88.4	90.3	87.7	80.4	80.1	77.8	87.4	111	81.7
COD	mg/L	N/A	19	158	14	12	40	40	< 5	18	42	8	106	33	37	< 5	9	21	30	10
Chloride	mg/L	250	104	105	117	19.5	24.3	22.8	17.3	17.7	35.3	39.9	37.8	32.6	39.4	33.8	34.2	27.1	28.8	33.8
Conductivity	umhos/cm	N/A	1090	1060	1140	867	798	785	928	783	734	710	730	668	655	675	660	697	737	673
Cyanide	mg/L	0.2	<0.005	<0.005	<0.005															
DOC	mg/L	5	7	4.1	2.6	2.8	1.8	2.6	4.3	2.9	2.8	2.5	3.4	2.7	2.9	3.3	2.9	4.1	3.2	2.7
Fluoride	mg/L	1.5	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	467	**541**	477	436	423	358	**509**	451	388	354	357	347	333	332	323	356	413	332
Ion Balance	%	N/A	1.1	4.29	0.479											2.14	1.29	0.854	4.25	2.58
Iron	mg/L	0.3	**3.32**	**1.43**	**1.8**	< 0.005	0.022	< 0.005	0.132	< 0.005	0.026	< 0.005	0.018	< 0.005	< 0.005	< 0.005	< 0.005	0.011	**0.929**	< 0.005
Magnesium	mg/L	N/A	40.2	44.6	39.5	33.5	32.7	25.9	34.1	29.6	32.3	32.4	32	31.2	32.2	32.1	31.2	33.4	33	31
Manganese	mg/L	0.05	**0.091**	0.032	0.041	< 0.001	0.006	< 0.001	0.032	0.002	0.013	0.001	0.019	0.015	0.004	0.002	0.001	0.012	**0.299**	0.001
Nitrate	mg/L	10	<0.05	<0.05	<0.05	< 0.1	0.1	< 0.1	0.1	< 0.05	< 0.05	0.09	0.09	< 0.05	< 0.05	0.14	0.1	< 0.05	0.14	0.08
Nitrite	mg/L	1	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	< 0.05
Tot Kjel N	mg/L	N/A	0.9	0.9	12.9	0.4	1.7	0.5	0.6	< 1	0.7	0.7	1.9	0.5	1.1	0.2	0.3	0.5	0.8	1
pH-Lab	pH unit	6.5-8.5	7.74	7.82	7.75	7.72	7.56	7.81	7.67	7.76	7.75	7.86	7.95	7.95	7.9	7.82	7.92	8.1	7.84	7.77
Phenols	mg/L	N/A	<0.001	0.002	<0.001	< 0.001	< 0.001	< 0.001	0.088	< 0.001	0.004	< 0.001	0.08	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001
Phosphorus	mg/L	N/A	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1.23	3.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	4.1	4.5	4	2.2	2.3	1.7	2.5	1.8	2.7	2.6	2.4	2.2	2.3	2.2	2.1	2.3	2.6	2.2
Sodium	mg/L	200	39.9	27.1	41.4	12.4	11.5	10.6	13	10.9	13.3	13.6	13.7	11.6	12.4	11.8	11.6	11.4	12.8	10.9
Sulphate	mg/L	500	33	31	31	62	55	56	61	45	56	59	61	49	57	47	52	53	54	52
TDS	mg/L	500	**586**	**570**	**615**	481	452	419	**534**	446	430	390	417	358	361	356	352	393	432	354
TSS	mg/L	N/A	6	7	42															
Turbidity	NTU	N/A	19	26.7	170															
Colour	TCU	5	<2	<2	<2															
Aluminum	mg/L	0.1	0.04	0.04	0.07	0.04	0.03	0.03	0.06	0.04	0.06	0.05	0.04	0.05	0.05	0.06	0.05	0.05	0.07	0.05
Antimony	mg/L	0.006	<0.0001	<0.0001	0.0001	< 0.0001	0.0002	< 0.0001	0.0002	0.0001	0.0002	< 0.0001	0.0002	< 0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0001	<0.0001	<0.0001	0.0002	0.0002	< 0.0001	0.0003	0.0003	0.0003	0.0004	0.0004	0.0003	0.0005	0.0005	0.0007	0.0003	0.0012	0.0004
Barium	mg/L	1	0.316	0.374	0.295	0.152	0.144	0.118	0.168	0.134	0.14	0.128	0.128	0.109	0.121	0.116	0.118	0.126	0.159	0.125
Beryllium	mg/L	N/A	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.1	0.113	0.106	0.031	0.052	0.008	0.054	0.038	0.059	0.054	0.049	0.048	0.052	0.05	0.053	0.051	0.055	0.048
Cadmium	mg/L	0.005	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	<0.001	<0.001	<0.001	0.0031	< 0.0002	< 0.0002	0.0034	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.0002	<0.0001	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.012	0.01	< 0.005	< 0.0001	< 0.005	0.005	< 0.005	< 0.005
Copper	mg/L	1	<0.0001	0.0004	0.0007	0.0002	0.0006	0.0003	0.0014	0.0013	0.0005	0.0016	0.0011	0.0009	0.0006	0.0005	0.0025	0.0015	0.0006	0.0008
Lead	mg/L	0.01	<0.00002	0.00003	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002	0.00005	0.00004	0.00004	< 0.00002	0.00004	0.00005	0.00006	0.00032	0.00002
Mercury	mg/L	0.001	0.00002	<0.00002	<0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	<0.0001	<0.0001	<0.0001	0.0002	0.0003	0.0003	0.0003	0.0004	0.0004	0.0006	0.0005	0.0005	0.0005	0.0004	0.0005	0.0004	0.0004	0.0005
Nickel	mg/L	N/A	0.001	0.0014	0.0011	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	<0.001	0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.32	1.49	1.17	0.822	0.735	0.642	0.855	0.708	0.653	0.753	0.729	0.727	0.768	0.778	0.757	0.81	0.843	0.767
Thallium	mg/L	N/A	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	<0.0001	<0.0001	<0.0001	0.0019	0.0007	0.001	0.0013	0.0027	0.0005	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0001
Zinc	mg/L	5	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	12-91-I 3-May-22	12-91-I 25-Oct-22	12-91-I 2-May-23	12-91-I 18-Oct-23	12-91-I 6-May-24	12-91-I 16-Oct-24	12-91-II 26-May-15	12-91-II 13-Oct-15	12-91-II 17-May-16	12-91-II 17-Oct-16	12-91-II 23-May-17	12-91-II 17-Oct-17	12-91-II 8-May-18	12-91-II 11-Oct-18	12-91-II 8-May-19	12-91-II 8-Oct-19	12-91-II 5-May-20	12-91-II 13-Oct-20
Alkalinity	mg/L	500	301	293	294	297	261	241	411	427	402	381	389	412	315	476	380	326	308	458
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.1	< 0.01	0.65	0.5	0.22	0.39	0.13	0.29	0.09	0.12	0.09	0.12	0.05	0.16	0.12	0.23	0.05	0.19
BOD	mg/L	N/A													-					
Calcium	mg/L	N/A	119	90.9	93.7	85.9	86.6	76	163	179	141	184	158	190	122	209	166	160	113	199
COD	mg/L	N/A	32	28	< 5	15	26	29	27	35	32	44	36	51	20	43	37	33	23	31
Chloride	mg/L	250	2.3	44.8	33.2	31.4	34.2	33.7	3.1	5.2	3.6	3.8	3.1	3.8	4	6.3	1.2	32.2	1.4	2.3
Conductivity	umhos/cm	N/A	644	738	731	717	691	664	830	935	821	899	726	827	582	1010	798	803	631	959
Cyanide	mg/L	0.2																		
DOC	mg/L	5	**8.5**	2.3	2.9	3.7	3.9	2.7	**9.8**	**13.6**	**11.5**	**17.2**	**11.2**	**11.8**	9	**14.4**	**12.3**	**9.7**	**9.6**	**11.5**
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.2	0.2	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	324	367	366	343	346	322	459	**512**	397	**512**	438	**529**	342	**582**	462	457	311	**550**
Ion Balance	%	N/A	1.19	3.63	0.536	2.73	3.01	1.99							1.22				1.56	5.44
Iron	mg/L	0.3	0.106	0.28	0.016	0.047	0.235	0.01	0.217	**0.808**	0.216	0.027	0.15	**1.25**	0.02	**1.27**	**0.839**	**2.69**	0.162	**2.22**
Magnesium	mg/L	N/A	6.47	34.1	32.1	31.2	31.6	32.1	12.5	15.4	10.6	12.8	10.4	13.2	8.99	14.5	11.5	13.9	6.87	12.7
Manganese	mg/L	0.05	**0.251**	0.04	0.01	0.012	0.021	0.002	**0.508**	**0.516**	**0.276**	**0.067**	**0.194**	**0.762**	**0.259**	**0.605**	**0.958**	**0.675**	**0.062**	**0.654**
Nitrate	mg/L	10	< 0.05	0.12	0.06	0.14	0.12	0.13	0.2	0.1	0.2	1.6	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.28	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	1	0.4	1	0.8	0.8	0.5	0.8	1.6	1	1.5	1	1.7	0.9	1.1	0.9	1	0.9	1.1
pH-Lab	pH unit	6.5-8.5	7.5	7.72	7.79	7.31	7.81	8.02	7.5	7.3	7.62	7.75	7.68	7.45	7.7	7.61	7.62	7.55	7.58	7.36
Phenols	mg/L	N/A	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.005	< 0.001	0.019	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.13	< 0.1	0.07	0.11	< 0.1	< 0.1
Potassium	mg/L	N/A	0.5	2.5	2.5	2.4	2.3	2.3	0.7	1.1	0.6	0.8	0.6	0.9	0.7	1	0.7	1	0.6	1
Sodium	mg/L	200	3.5	11.2	10.9	10.8	12.4	10.6	6.1	8.7	5.7	7.3	4.3	5.4	3.8	6.6	3.7	9.4	2.7	5.3
Sulphate	mg/L	500	20	66	54	47	45	44	43	92	46	106	18	53	21	76	31	51	16	47
TDS	mg/L	500	333	426	403	372	359	345	477	**560**	451	**550**	428	**516**	350	**601**	444	467	326	**545**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.09	0.07	0.02	0.02	**0.14**	0.02	0.04	0.04	0.04	0.05	0.05	0.09	0.07	0.08	0.09	0.08	0.07	0.1
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0004	0.0001	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0009	0.0005	0.0003	0.0004	0.0005	0.0005	0.002	0.0006	0.0008	0.001	0.0007	0.001	0.0005	0.0005	0.0009	0.0006	0.0006	0.0004
Barium	mg/L	1	0.047	0.151	0.137	0.13	0.147	0.127	0.054	0.069	0.05	0.086	0.052	0.079	0.047	0.081	0.054	0.06	0.038	0.076
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.008	0.039	0.05	0.054	0.051	0.051	0.008	0.043	< 0.005	0.028	0.021	0.035	0.013	0.029	0.018	0.041	0.011	0.038
Cadmium	mg/L	0.005	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.000014	< 0.000014	0.00002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.004	< 0.0002	< 0.0002	0.0034	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	0.0001	0.0003	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0016	< 0.005	< 0.005	< 0.005	0.0022	< 0.005
Copper	mg/L	1	0.0016	0.0005	0.0005	0.0007	0.0008	0.0007	< 0.0001	0.0005	0.0009	0.0023	0.0009	0.0004	0.0028	0.0004	0.0011	< 0.0001	0.0028	0.0007
Lead	mg/L	0.01	0.00013	< 0.00002	< 0.00002	<0.00002	0.00045	<0.00002	< 0.00002	< 0.00002	0.00006	< 0.00002	0.00003	< 0.00002	0.00235	0.00004	0.00002	< 0.00002	0.00008	0.00004
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	0.00002	0.00003	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0005	0.0004	0.0005	0.0004	0.0005	0.0002	0.0001	0.0008	0.0007	0.0003	0.0003	0.0005	< 0.0001	0.0002	0.0001	0.0003	< 0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	0.0004	0.0006	0.0009	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.281	0.852	0.8	0.787	0.82	0.798	0.438	0.525	0.396	0.523	0.395	0.413	0.305	0.492	0.397	0.412	0.271	0.484
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0002	0.0001	< 0.0001	<0.0001	0.0002	<0.0001	0.0025	0.0012	0.0017	0.002	0.0034	0.0013	0.0002	0.0003	0.0003	0.0003	0.0002	0.0003
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	12-91-II 4-May-21	12-91-II 13-Oct-21	12-91-II 25-Oct-22	12-91-II 2-May-23	12-91-II 18-Oct-23	12-91-II 6-May-24	12-91-III 6-May-24	12-91-II 16-Oct-24	13-91-I 26-May-15	13-91-I 13-Oct-15	13-91-I 11-May-16	13-91-I 13-Oct-16	13-91-I 23-May-17	13-91-I 16-Oct-17	13-91-I 7-May-18	13-91-I 11-Oct-18	13-91-I 8-May-19	13-91-II 7-Oct-19
Alkalinity	mg/L	500	381	388	404	371	399	352	493	422	198	195	196	192	193	192	192	193	182	430
Unionized Ammonia	mg/L	N/A												0.02						
Ammonia	mg/L	N/A	0.06	0.2	0.15	0.31	0.44	0.1	1.29	0.45	0.44	0.41	0.44	0.47	0.44	0.46	0.47	0.45	0.46	0.07
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	144	153	153	130	142	133	184	166	53.3	51.7	46.7	56.3	54.1	57.8	54.3	57.1	57.1	277
COD	mg/L	N/A	30	38	18	26	29	29	106	94	< 5	< 5	< 5	< 5	14	< 5	< 5	8	7	18
Chloride	mg/L	250	2	11.9	14.5	0.5	13	3.3	**340**	10.8	69.9	71.8	73.4	77.2	59.9	67.7	76.7	84.4	79.9	**790**
Conductivity	umhos/cm	N/A	725	801	840	735	882	743	2010	885	627	631	627	643	617	618	696	666	653	3010
Cyanide	mg/L	0.2																		
DOC	mg/L	5	**11.6**	**8.9**	**9.4**	**9.3**	**10.9**	**9.8**	**16**	**9.2**	0.7	0.8	0.7	1.1	1.2	1.4	1.6	1.9	1.7	2.3
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.7	<0.1	0.3	0.3	0.3	1.4	0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 1
Hardness	mg/L	500	395	434	436	353	408	364	**683**	477	293	300	269	309	296	321	307	304	319	**839**
Ion Balance	%	N/A	0.294	1.59	1.88	3.2	5.55	1.19	2.87	2.42										
Iron	mg/L	0.3	**0.416**	**1.14**	**0.434**	**1.09**	**1.14**	**2.15**	**10.6**	**4.08**	0.207	0.251	0.189	0.292	0.221	**0.332**	0.213	0.262	0.235	**2.5**
Magnesium	mg/L	N/A	8.43	12.5	13.1	6.93	13	7.63	54	15.2	38.9	41.5	37.1	41	39	43	41.7	39.3	42.8	35.7
Manganese	mg/L	0.05	**0.485**	**0.483**	**0.136**	**0.364**	**0.33**	**0.724**	0.045	**0.944**	0.005	0.006	0.007	0.008	0.006	0.006	0.006	0.006	0.007	**0.108**
Nitrate	mg/L	10	< 0.05	< 0.05	0.15	< 0.05	<0.05	<0.05	<0.40	0.05	0.2	< 0.1	0.1	0.1	< 0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.5
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.40	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5
Tot Kjel N	mg/L	N/A	0.6	1.3	1.1	0.8	1.3	0.8	3.2	0.9	0.5	0.5	0.6	0.6	0.9	0.6	0.5	0.6	0.5	0.5
pH-Lab	pH unit	6.5-8.5	7.71	7.54	7.47	7.46	7.19	7.54	7.56	7.66	7.97	7.91	7.99	8.11	7.98	7.98	7.99	7.86	8.03	7.45
Phenols	mg/L	N/A	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.005	0.002	0.006	< 0.001	0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.04	0.26
Potassium	mg/L	N/A	0.6	1	1	0.6	1	0.5	6.4	1	3.5	3.4	3.1	3.5	3.4	3.8	4.3	3.7	3.9	2.9
Sodium	mg/L	200	2.7	13	7	2.9	9.9	3.2	151	6	12.4	11.9	11.6	13.3	12.7	12.4	13	12.7	12.9	**345**
Sulphate	mg/L	500	21	46	45	15	65	30	11	41	21	22	21	21	17	18	20	22	20	< 10
TDS	mg/L	500	408	473	477	380	467	388	**1110**	468	320	320	312	330	304	319	326	335	326	**1719**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.08	0.06	0.09	0.04	0.06	0.04	0.06	0.06	0.02	0.01	< 0.01	0.04	0.01	0.04	0.04	0.03	0.03	**0.12**
Antimony	mg/L	0.006	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	<0.0001	<0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0006	0.0008	0.0003	0.0005	0.0007	0.0007	0.0002	0.0018	0.0001	0.0002	0.0001	0.0003	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	0.0007
Barium	mg/L	1	0.054	0.074	0.065	0.048	0.056	0.05	**1.09**	0.064	0.107	0.109	0.093	0.109	0.106	0.124	0.114	0.113	0.109	0.584
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.018	0.04	0.019	0.012	0.035	0.015	0.297	0.041	0.082	0.108	0.06	0.101	0.097	0.113	0.105	0.094	0.108	0.024
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000029
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	0.0022	< 0.0002	< 0.0002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	0.0003	0.0009	0.0004	0.0008	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0016	0.0005	0.0012	0.0007	0.0007	0.0002	0.0002	0.0003	< 0.0001	0.0001	< 0.0001	0.0002	0.0008	0.0002	0.0001	0.0002	0.0003	0.0018
Lead	mg/L	0.01	0.00005	0.00006	0.00003	0.00003	0.00006	<0.00002	<0.00002	0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00009
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0003	0.0002	0.0001	0.0003	0.0002	<0.0001	0.0003	< 0.0001	< 0.0001	0.0006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	0.0012	0.0014	0.015	0.0009	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	0.003	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.35	0.467	0.439	0.29	0.399	0.304	1.51	0.452	1.54	1.54	1.25	1.54	1.58	1.42	1.58	1.51	1.6	1.34
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0002	0.0002	0.0001	< 0.0001	0.0002	0.0002	0.0003	0.0002	0.0012	0.0004	< 0.0001	0.0003	0.0013	0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0004
Zinc	mg/L	5	< 0.005	< 0.005	0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	13-91-I 7-Oct-19	13-91-I 5-May-20	13-91-II 13-Oct-20	13-91-I 13-Oct-20	13-91-I 4-May-21	13-91-I 13-Oct-21	13-91-I 3-May-22	13-91-I 25-Oct-22	13-91-I 2-May-23	13-91-I 18-Oct-23	13-91-I 6-May-24	13-91-I 16-Oct-24	13-91-II 26-May-15	13-91-II 13-Oct-15	13-91-II 11-May-16	13-91-II 23-May-17	13-91-II 16-Oct-17	13-91-II 7-May-18
Alkalinity	mg/L	500	184	185	363	180	196	198	185	189	184	210	189	187	384	391	354	317	364	324
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.46	0.42	0.27	0.45	0.46	0.5	0.53	0.53	1.69	0.71	1.3	1.26	0.09	0.13	0.04	0.04	0.13	0.04
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	60.4	55.4	173	55.6	52.9	58.6	56.5	52.1	55	55.7	56	58	88.9	123	132	176	230	162
COD	mg/L	N/A	6	< 5	45	5	12	12	6	< 5	< 5	11	35	31	< 5	< 5	< 5	8	11	< 5
Chloride	mg/L	250	84.6	79.7	**477**	87.2	81.8	88.3	93.1	125	103	90.5	97.7	95.1	202	**251**	227	248	**353**	**366**
Conductivity	umhos/cm	N/A	653	657	2190	674	664	674	697	690	701	706	728	709	1500	1580	1440	1530	2120	1510
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.8	1.7	1.2	1.8	1.5	1.3	1.4	< 0.2	1.6	2.5	2.7	2.1	0.6	0.3	0.5	0.6	0.9	1.2
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	0.1	<0.1	0.2	<0.1	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	328	309	**537**	309	301	320	311	306	305	308	314	323	317	417	387	**510**	**678**	470
Ion Balance	%	N/A		4.11	1.11	2.73	0.696	1.48	1.21	7.23	2.19	2.4	1.22	2.58						
Iron	mg/L	0.3	**0.318**	0.216	**2.4**	0.296	0.278	0.291	0.293	**0.461**	0.281	0.126	**0.336**	0.28	0.094	2	**0.336**	**1.91**	**4.28**	**0.671**
Magnesium	mg/L	N/A	43.1	41.5	25.5	41.4	41	42.1	41.2	42.7	40.8	41	42.3	43.2	23.1	26.4	14.1	17.3	25.1	15.7
Manganese	mg/L	0.05	0.007	0.006	**0.144**	0.006	0.006	0.007	0.007	0.006	0.008	0.005	0.007	0.006	0.013	0.041	0.01	0.04	**0.093**	0.032
Nitrate	mg/L	10	0.21	0.17	< 0.05	< 0.05	< 0.05	0.14	< 0.05	0.18	< 0.05	0.44	0.32	<0.05	0.1	< 0.1	< 0.1	< 0.05	0.48	0.06
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.17	< 0.05	< 0.05	< 0.05	0.09	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.7	0.5	0.9	0.6	0.6	0.9	0.6	0.6	1.5	0.9	1	1.2	0.5	0.4	0.3	0.9	0.3	0.2
pH-Lab	pH unit	6.5-8.5	7.91	7.9	7.52	7.96	8.05	7.89	7.65	7.84	7.82	7.3	7.75	8.02	7.64	7.44	7.58	7.72	7.61	7.66
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	0.017	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.007	< 0.001
Phosphorus	mg/L	N/A	0.29	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	4	3.9	2.7	3.7	3.7	3.9	3.8	4	3.9	4	4.1	3.9	2	2.8	1.2	1.5	2.3	1.7
Sodium	mg/L	200	13.3	12.8	**249**	12.8	13	13.4	12.7	12.6	12.6	12.8	13	12.6	142	162	108	137	167	144
Sulphate	mg/L	500	19	19	28	21	19	21	20	27	23	20	20	18	26	25	24	19	19	24
TDS	mg/L	500	336	323	**1175**	330	330	347	340	378	349	367	379	368	**715**	**827**	**719**	**790**	**1019**	**909**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.04	0.04	0.09	0.03	0.03	0.03	0.04	0.04	0.02	0.02	0.03	0.02	0.08	0.03	0.03	0.05	0.09	0.08
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0002
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	0.0009	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0013	0.0004	0.0012	0.0024	< 0.0005
Barium	mg/L	1	0.119	0.109	0.365	0.11	0.109	0.123	0.114	0.121	0.12	0.118	0.14	0.12	0.14	0.315	0.174	0.252	0.436	0.237
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.108	0.104	0.032	0.102	0.101	0.104	0.099	0.091	0.1	0.106	0.1	0.102	0.02	0.036	< 0.005	0.013	0.024	0.012
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000059
Chromium	mg/L	0.05	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0046	< 0.0002	< 0.0002	0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	<0.0001	<0.0001	< 0.005	< 0.005	< 0.005	< 0.005	0.005	0.0005
Copper	mg/L	1	< 0.0001	0.0005	0.0011	0.0015	0.0006	0.0003	0.0002	0.0002	0.0006	0.0003	0.0001	0.0004	0.0003	0.0015	0.0018	0.001	0.0007	0.0017
Lead	mg/L	0.01	< 0.00002	0.00003	0.00011	0.00005	0.00002	0.00002	< 0.00002	0.00003	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00059
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0002	0.0003	0.0001	< 0.0001	< 0.0004
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.0002	<0.0002	0.0004	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0002
Strontium	mg/L	N/A	1.64	1.62	0.963	1.6	1.62	1.68	1.62	1.68	1.63	1.61	1.71	1.66	0.805	0.967	0.461	0.638	0.808	0.542
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0027	0.0008	< 0.0001	0.002	0.0009	< 0.0007
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	13-91-II 11-Oct-18	13-91-II 8-May-19	13-91-II 5-May-20	13-91-II 4-May-21	13-91-II 13-Oct-21	13-91-II 3-May-22	13-91-II 25-Oct-22	13-91-II 2-May-23	13-91-II 18-Oct-23	13-91-II 6-May-24	13-91-II 16-Oct-24	14-07 26-May-15	14-07 13-Oct-15	14-07 12-May-16	14-07 13-Oct-16	14-07 23-May-17	14-07 16-Oct-17	14-07 7-May-18
Alkalinity	mg/L	500	392	288	232	258	393	253	396	223	428	263	383	336	325	300	259	281	269	258
Unionized Ammonia	mg/L	N/A															< 0.01			
Ammonia	mg/L	N/A	0.06	0.14	0.03	0.14	0.05	1.2	0.28	1.07	0.31	0.1	0.76	0.1	0.04	0.09	0.09	0.06	0.14	0.06
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	243	108	85.6	99.5	181	105	153	80.7	132	90.9	142	149	142	105	126	107	130	102
COD	mg/L	N/A	12	19	9	23	18	20	33	10	16	52	145	62	204	254	8	23	37	5
Chloride	mg/L	250	**589**	134	44.4	101	**468**	54.9	**500**	17	**374**	26.3	**370**	2.2	3.1	2.6	21.1	3.9	21.6	2
Conductivity	umhos/cm	N/A	2470	956	610	821	2080	680	2460	494	2080	613	2050	649	647	583	629	505	622	470
Cyanide	mg/L	0.2																		
DOC	mg/L	5	2	1.9	3.1	2.3	1.5	2.2	< 0.2	3.6	2.9	3.8	3.3	1.3	0.8	0.5	1.4	0.7	2.2	1.7
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	<0.7	<0.1	<0.7	0.1	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	**711**	337	231	303	**527**	284	471	219	383	245	462	392	374	277	352	284	353	272
Ion Balance	%	N/A			6.67	1.34	1.35	0.975	1.1	0.227	1.58	3.36	1.71							
Iron	mg/L	0.3	**3.52**	< 0.005	0.008	< 0.005	**1.44**	0.013	**1.54**	0.111	**0.988**	0.016	<0.005	< 0.005	< 0.005	< 0.005	0.04	< 0.005	0.005	0.022
Magnesium	mg/L	N/A	25.1	16.4	4.22	13.3	18.1	5.15	21.5	4.11	13	4.24	25.8	4.57	4.88	3.32	9.41	4.23	6.8	4.22
Manganese	mg/L	0.05	**0.098**	0.025	0.001	< 0.001	**0.066**	0.002	0.04	0.007	0.03	0.001	0.016	< 0.001	< 0.001	< 0.001	**0.075**	< 0.001	**0.058**	0.001
Nitrate	mg/L	10	< 0.05	< 0.05	0.12	< 0.05	< 0.05	< 0.05	< 0.5	< 0.05	<0.40	<0.05	<0.40	0.9	0.6	0.3	0.2	< 0.05	< 0.05	0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	< 0.05	<0.40	<0.05	<0.40	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.4	0.7	0.6	0.9	0.5	1.8	1.5	1.2	0.8	0.9	1.7	3.5	4	2.8	2.3	< 1	1.1	2.2
pH-Lab	pH unit	6.5-8.5	7.62	7.84	7.77	8.06	7.63	7.63	7.49	7.75	7.43	7.76	7.8	7.55	7.74	7.79	7.94	7.85	7.81	7.87
Phenols	mg/L	N/A	0.003	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.002	0.001	0.003	< 0.001
Phosphorus	mg/L	N/A	< 0.1	0.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.7	1	0.2	0.8	2.4	0.1	2.6	0.1	2.2	<0.1	2.8	0.3	0.4	0.2	0.8	0.3	0.9	0.4
Sodium	mg/L	200	**274**	64.2	15.8	55.1	**270**	26.2	**289**	17.7	**274**	20.6	**233**	3.9	5	3.5	15.1	2.6	13.8	2.4
Sulphate	mg/L	500	29	11	9	12	36	7	29	9	<2	9	34	16	21	10	35	10	31	7
TDS	mg/L	500	**1401**	**508**	298	437	**1213**	352	**1235**	263	**1150**	318	**1130**	382	374	307	363	296	365	273
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.09	0.07	0.06	0.03	0.07	0.06	0.09	0.05	0.05	0.05	0.05	0.04	0.04	0.02	0.06	0.03	0.07	0.07
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	0.0002
Arsenic	mg/L	0.025	0.0011	0.0005	0.0001	0.0002	0.0009	0.0001	0.001	0.0002	0.0005	0.0001	0.0005	0.0001	0.0001	< 0.0001	0.0005	0.0001	0.0002	< 0.0001
Barium	mg/L	1	0.462	0.132	0.039	0.124	0.331	0.043	0.323	0.036	0.213	0.034	0	0.041	0.045	0.027	0.067	0.036	0.066	0.036
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.021	0.013	< 0.005	0.013	0.022	< 0.005	0.012	0.009	0.022	0.006	0.031	< 0.005	0.008	< 0.005	0.01	< 0.005	0.011	0.006
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000029	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.0002	0.0046	< 0.0002	0.0018	0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.01	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	0.0002	0.0004	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0005
Copper	mg/L	1	0.0002	0.0008	0.0011	0.001	0.0021	0.0006	0.0005	0.0014	0.0002	0.0008	0.0003	< 0.0001	0.0003	< 0.0001	0.0004	0.0002	0.0003	0.0002
Lead	mg/L	0.01	< 0.00002	0.00003	0.00003	0.00004	0.00018	0.00004	< 0.00009	0.00032	<0.00004	0.0001	0.00007	< 0.00002	< 0.00002	< 0.00002	0.00006	< 0.00002	< 0.00002	0.00005
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	<0.00002	<0.00002	0.00006	0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0001	0.0001	0.0001	0.0003	0.0001	0.0006	0.0001	0.0001	<0.0001	0.0002	< 0.0001	0.0001	0.0008	0.0004	0.0002	0.0002	< 0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0003	0.0003	0.0004	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	0.003	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001
Strontium	mg/L	N/A	0.901	0.669	0.203	0.553	0.716	0.242	0.821	0.199	0.492	0.212	1.02	0.257	0.255	0.175	0.239	0.192	0.203	0.178
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0004	< 0.0001	< 0.0004	0.0001	<0.0001	<0.0001	<0.0001	0.0034	0.0018	< 0.0001	0.0008	0.002	0.0009	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	14-07 9-Oct-18	14-07 8-May-19	14-07 8-Oct-19	14-07 5-May-20	14-07 13-Oct-20	14-07 4-May-21	14-07 13-Oct-21	14-07 3-May-22	14-07 25-Oct-22	14-07 2-May-23	14-07 18-Oct-23	14-07 6-May-24	14-07 16-Oct-24	15-91-I 26-May-15	15-91-I 13-Oct-15	15-91-I 19-May-16	15-91-I 13-Oct-16	15-91-I 23-May-17
Alkalinity	mg/L	500	259	258	271	240	265	251	286	260	285	244	293	270	283	426	451	426	417	457
Unionized Ammonia	mg/L	N/A																	0.02	
Ammonia	mg/L	N/A	0.07	0.06	0.11	0.03	0.19	0.08	0.05	0.46	0.23	1.67	0.51	0.76	0.6	0.38	1.38	0.43	2.7	0.6
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	115	110	129	104	117	100	116	107	109	89.3	106	102	111	168	169	171	164	155
COD	mg/L	N/A	< 5	220	24	152	17	43	8	48	10	21	20	46	133	88	71	108	27	34
Chloride	mg/L	250	16.5	2.5	27.8	5.5	32.6	11.7	39.8	4.1	43.6	2.5	23.5	2.5	22.3	59.4	56.5	46.7	38.3	28.5
Conductivity	umhos/cm	N/A	598	527	660	517	677	525	681	537	673	482	664	541	664	1030	1050	985	983	983
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.6	1.8	2.3	2.4	2.3	2.4	1.9	2.3	1	2.5	3.3	3.3	2.4	**5.5**	**6.9**	**6.2**	**7.1**	**7.4**
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	< 0.1	< 0.1
Hardness	mg/L	500	321	291	355	278	325	272	326	286	308	239	288	270	305	**515**	**520**	**521**	**505**	475
Ion Balance	%	N/A				3.47	1.32	0.0119	2.58	3.72	6.87	1.84	8.38	0.123	3.29					
Iron	mg/L	0.3	< 0.005	0.005	0.007	< 0.005	0.01	< 0.005	0.005	< 0.005	0.005	0.012	<0.005	<0.005	0.01	**0.998**	**3.11**	**1.25**	**1.73**	0.101
Magnesium	mg/L	N/A	8.26	3.89	7.91	4.34	8.02	5.25	8.71	4.53	8.73	3.7	5.67	3.66	6.53	23.3	23.6	22.8	23	21.4
Manganese	mg/L	0.05	0.043	< 0.001	**0.056**	0.001	0.044	< 0.001	0.011	< 0.001	0.006	0.001	0.003	<0.001	0.007	0.034	0.035	0.034	**0.053**	0.032
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05	0.15	< 0.05	0.22	0.05	0.08	< 0.05	< 0.05	0.2	<0.05	<0.05	< 0.1	< 0.1	0.4	0.2	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.11	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05
Tot Kjel N	mg/L	N/A	1	3	1.1	1	0.6	2.1	0.3	2.3	0.5	2.3	1	1	1.3	2	4.2	3.3	20.6	1.6
pH-Lab	pH unit	6.5-8.5	7.92	7.91	7.7	7.76	7.63	7.98	7.74	7.49	7.68	7.78	7.34	7.71	7.83	7.49	7.63	7.64	7.68	7.72
Phenols	mg/L	N/A	0.003	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.001	0.01
Phosphorus	mg/L	N/A	< 0.1	5.72	1.22	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	0.1	< 0.1	0.4	< 0.1
Potassium	mg/L	N/A	0.8	0.3	0.8	0.4	0.9	0.4	0.9	0.3	0.9	0.4	0.9	0.4	0.9	2.7	3.3	2.5	2.8	2.2
Sodium	mg/L	200	12.3	2.3	16.2	2.5	12.5	4.7	11.1	2.5	9.7	2.1	3.5	2.5	3.7	22.8	23.8	25.9	26.7	24.8
Sulphate	mg/L	500	30	6	32	16	32	13	25	6	32	5	22	5	21	52	38	43	46	27
TDS	mg/L	500	339	280	377	276	362	286	374	281	375	249	345	280	345	**585**	**589**	**571**	**558**	**535**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.06	0.07	0.08	0.06	0.08	0.06	0.05	0.06	0.07	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.04
Antimony	mg/L	0.006	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	0.0002	< 0.0001	< 0.0001	< 0.0001	0.0002	<0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	0.0003	0.0001
Arsenic	mg/L	0.025	0.0003	< 0.0001	0.0002	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	<0.0001	0.0001	0.0006	0.0006	0.0002	0.0013	0.0003
Barium	mg/L	1	0.055	0.035	0.059	0.037	0.057	0.034	0.052	0.039	0.058	0.038	0.058	0.042	0.056	0.12	0.134	0.128	0.128	0.107
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.01	0.007	0.01	0.006	0.011	0.008	0.011	0.005	< 0.005	0.008	0.012	0.006	0.011	0.013	0.026	0.03	0.04	0.036
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014
Chromium	mg/L	0.05	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0054	0.0073	< 0.0002	0.0025	0.001
Cobalt	mg/L	N/A	0.01	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	0.0002	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0006	0.0006	0.0003	0.0007	0.0019	0.0006	0.0005	0.0004	0.0004	0.0077	0.0007	0.0005	0.0006	< 0.0001	0.0002	0.0003	0.0001	0.0001
Lead	mg/L	0.01	0.00004	0.00003	< 0.00002	0.00003	0.00006	< 0.00002	< 0.00002	< 0.00002	0.00002	0.00005	<0.00002	<0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	0.00003	< 0.00002	< 0.00002	0.00003	< 0.00002
Molybdenum	mg/L	N/A	0.0004	0.0001	0.0003	0.0001	0.0003	0.0004	0.0003	0.0003	0.0002	0.0003	0.0002	0.0001	0.0002	0.0001	< 0.0001	0.0006	0.0003	0.0004
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0003	<0.0002	0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	0.001	< 0.001	0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.212	0.188	0.233	0.185	0.219	0.194	0.233	0.19	0.235	0.164	0.195	0.186	0.202	0.425	0.426	0.425	0.392	0.367
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0032	0.0028	0.001	0.001	0.0029
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	15-91-I 16-Oct-17	15-91-I 7-May-18	15-91-I 9-Oct-18	15-91-I 8-May-19	15-91-I 7-Oct-19	15-91-I 5-May-20	15-91-I 13-Oct-20	15-91-I 4-May-21	15-91-I 13-Oct-21	15-91-I 3-May-22	15-91-I 25-Oct-22	15-91-I 2-May-23	15-91-I 18-Oct-23	15-91-I 6-May-24	15-91-I 16-Oct-24	15-91-II 29-May-15	15-91-II 15-Oct-15	15-91-II 19-May-16
Alkalinity	mg/L	500	411	403	410	183	371	381	391	422	**515**	496	**583**	**548**	**578**	**519**	497	**617**	**606**	**619**
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	1.01	0.08	3.27	1.19	1.28	0.08	1.11	1.13	1.07	1.46	8.87	5.07	3.14	0.83	3.61	0.73	0.82	0.66
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	160	148	151	63	147	140	150	142	162	182	192	184	186	181	188	231	222	245
COD	mg/L	N/A	62	11	258	95	53	60	32	118	41	49	565	49	92	64	124	36	35	49
Chloride	mg/L	250	30.1	30.5	30.8	10	25.1	26	25.7	23.8	23.1	21.2	26	20.9	18.1	23.7	22.4	10.6	11.2	9.1
Conductivity	umhos/cm	N/A	897	862	951	421	851	876	898	927	1020	1110	1200	1160	1170	1160	1130	1120	1120	1120
Cyanide	mg/L	0.2																		
DOC	mg/L	5	**5.7**	4.2	**7.6**	**14.3**	6	**6.6**	**5.1**	**6.2**	4.9	**6.9**	**8.1**	**6.5**	9	**7.5**	**7.3**	**8.6**	**10.6**	**8.9**
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1
Hardness	mg/L	500	495	460	469	190	450	433	462	442	498	**564**	**600**	**572**	**578**	**566**	**585**	**635**	**611**	**674**
Ion Balance	%	N/A						2.14	4.48	1.24	4.07	4.62	1	0.184	0.868	0.87	4.1			
Iron	mg/L	0.3	**2.29**	0.04	**0.317**	0.039	**1.85**	0.036	**1.71**	**0.705**	0.142	**2.66**	**0.33**	**1.14**	**1.76**	0.039	0.132	**62.3**	**65.3**	**65.5**
Magnesium	mg/L	N/A	23	21.8	22.3	8.02	20.1	20.3	21.2	21.2	22.6	26.5	29.1	27.4	27.6	27.5	27.9	14.1	13.8	14.8
Manganese	mg/L	0.05	0.036	0.014	0.042	0.031	0.04	0.016	0.034	0.03	0.045	0.04	**0.064**	**0.07**	**0.057**	0.044	0.044	**0.333**	**0.18**	**0.364**
Nitrate	mg/L	10	< 0.05	0.07	< 0.05	0.09	1.03	0.46	< 0.05	0.37	< 0.05	0.08	1.37	< 0.05	<0.05	2.08	0.7	< 0.1	< 0.1	< 0.1
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.05	< 0.05	0.08	<0.05	0.32	< 0.1	< 0.1	< 0.1
Tot Kjel N	mg/L	N/A	2.5	1.6	13.7	2.3	3.1	2.9	2.1	4.3	2.2	2.3	32.3	7	9	2.9	6.4	1.4	1.5	1.3
pH-Lab	pH unit	6.5-8.5	7.67	7.79	7.99	7.71	7.67	7.68	7.47	7.84	7.57	7.63	7.58	7.58	7.44	7.6	7.65	6.82	6.97	6.84
Phenols	mg/L	N/A	0.004	< 0.001	0.006	0.005	< 0.002	< 0.002	< 0.002	0.003	0.001	< 0.001	0.007	< 0.001	0.004	<0.001	<0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	0.1	< 0.1	0.2	1.19	0.2	< 0.1	0.1	< 0.1	0.3	0.1	1.1	0.5	0.4	0.1	<0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.3	2.3	3.2	5.7	3	2.7	2.3	2.3	2.8	2.4	10.1	5.1	3.7	3.7	2.8	0.9	1.1	0.9
Sodium	mg/L	200	24.1	24.7	23.9	8.3	21.4	21.3	23.5	22.5	23.8	28.2	28.3	27.5	26.3	27	31.7	15.4	19.3	14.3
Sulphate	mg/L	500	37	47	42	12	40	42	47	53	54	55	65	59	52	60	72	4	4	7
TDS	mg/L	500	**527**	**516**	**524**	218	483	481	**506**	**520**	**599**	**618**	**712**	**653**	**632**	**626**	**608**	**647**	**635**	**664**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.09	0.07	0.07	0.05	0.09	0.08	0.08	0.08	0.06	0.1	**0.11**	0.05	0.07	0.07	0.05	0.06	0.06	0.06
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0002	0.0001	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0001	0.0002	0.0002	0.0001	0.0001	0.0001	0.0003	0.0083	0.0223	0.004
Barium	mg/L	1	0.133	0.112	0.112	0.036	0.142	0.112	0.141	0.113	0.124	0.142	0.171	0.119	0.159	0.131	0.137	0.088	0.107	0.094
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.044	0.042	0.04	0.02	0.04	0.039	0.047	0.045	0.047	0.084	0.082	0.085	0.093	0.083	0.086	0.07	0.11	0.074
Cadmium	mg/L	0.005	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0099	0.0194	< 0.0002
Cobalt	mg/L	N/A	< 0.005	< 0.0001	0.017	< 0.005	< 0.005	< 0.0001	< 0.005	0.005	< 0.005	< 0.005	< 0.005	0.005	<0.0001	0.0003	0.0003	< 0.005	0.009	< 0.005
Copper	mg/L	1	0.0003	0.0003	0.0002	0.0012	0.0002	0.0011	0.0007	0.0007	< 0.0001	0.0002	0.0004	0.0003	0.0002	0.0005	0.0007	< 0.0001	0.0002	0.0001
Lead	mg/L	0.01	< 0.00002	< 0.00002	< 0.00002	0.00009	< 0.00002	0.00004	0.00003	0.00003	< 0.00004	< 0.00004	0.00006	< 0.00004	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004	<0.00002	<0.00002	0.00003	0.00003	< 0.00002
Molybdenum	mg/L	N/A	< 0.0001	0.0005	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	0.0003	0.0002	0.0001	0.0002	0.0001	<0.0001	0.0003	0.0113	0.0001	0.0003	0.0004
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0022	0.0022	0.0017	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.001	0.001	0.001	<0.001	<0.001	<0.001	< 0.001	0.001	< 0.001
Silver	mg/L	N/A	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.337	0.358	0.355	0.145	0.346	0.342	0.354	0.366	0.398	0.449	0.487	0.449	0.448	0.455	0.439	0.577	0.589	0.576
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0011	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0071	0.0082	0.0026
Zinc	mg/L	5	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.014	< 0.005	<0.005	0.013	<0.005	< 0.005	< 0.005	0.006

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	15-91-II 23-May-17	15-91-II 16-Oct-17	15-91-II 7-May-18	15-91-II 9-Oct-18	15-91-II 8-May-19	15-91-II 5-May-20	15-91-II 13-Oct-20	15-91-II 4-May-21	15-91-II 3-May-22	15-91-II 2-May-23	15-91-II 18-Oct-23	15-91-II 6-May-24	15-91-II 16-Oct-24	16-91-I 29-May-15	16-91-I 15-Oct-15	16-91-I 17-May-16	16-91-I 13-Oct-16	16-91-I 23-May-17
Alkalinity	mg/L	500	**639**	**573**	**566**	**525**	**537**	**546**	**502**	**603**	**550**	**588**	**567**	**561**	**527**	384	377	364	375	**789**
Unionized Ammonia	mg/L	N/A																	< 0.01	
Ammonia	mg/L	N/A	0.61	0.67	0.47	0.59	0.45	0.38	0.51	0.42	0.6	2.71	0.74	0.43	0.66	0.55	0.61	0.56	0.73	2.31
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	218	247	216	211	220	199	197	213	219	206	196	205	205	190	178	153	178	258
COD	mg/L	N/A	43	58	34	32	44	30	30	42	33	42	32	45	59	82	76	117	74	60
Chloride	mg/L	250	4.6	3.5	3.8	3.8	4.1	3	2.8	3.5	3.3	2	3.4	1.7	3.4	**342**	**326**	**288**	**337**	78.1
Conductivity	umhos/cm	N/A	1050	1080	1010	1010	1020	981	950	1040	1070	1070	1020	1050	989	1800	1770	1740	1760	1450
Cyanide	mg/L	0.2																		
DOC	mg/L	5	**8.4**	**10.1**	**10**	**12**	**11.1**	**12.4**	**9.3**	**12.3**	**11.2**	8	**11.7**	**11.4**	**10.5**	**5.1**	**6.3**	**7.8**	**7.6**	**12.2**
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.1	0.2	0.1	0.1	< 0.1
Hardness	mg/L	500	**604**	**685**	**602**	**585**	**611**	**554**	**547**	**595**	**612**	**579**	**551**	**578**	**577**	**637**	**597**	**509**	**599**	**736**
Ion Balance	%	N/A						2.21	5.79	0.537	6.6	12.2	10.5	14.4	5.17					
Iron	mg/L	0.3	**52.2**		**47.1**	0.03	**50.7**	**50.2**		**49.6**	**54.2**	**57.7**	**53.5**	**58.4**	**49**	**1.51**	**7.06**	**1.06**	**2.5**	**29.7**
Magnesium	mg/L	N/A	14.5	16.4	15.1	13.9	14.9	13.7	13.3	15.1	15.6	15.8	14.8	15.8	15.6	39.4	36.8	31	37.4	21.8
Manganese	mg/L	0.05	**0.326**	**0.26**	**0.248**	**0.11**	**0.288**	**0.296**	**0.132**	**0.241**	**0.281**	**0.279**	**0.191**	**0.288**	**0.25**	0.03	0.032	0.024	0.037	**0.338**
Nitrate	mg/L	10	< 0.05	1.34	< 0.05	< 0.05	< 0.05	0.1	0.07	< 0.05	< 0.05	< 0.05	0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05
Nitrite	mg/L	1	0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05
Tot Kjel N	mg/L	N/A	1.2	1.2	1	1.1	0.9	0.9	1	0.9	1.2	3.4	0.6	0.9	1.2	2.6	2.6	2.5	2.4	3.1
pH-Lab	pH unit	6.5-8.5	7.36	7.21	7.26	7.71	7.31	7.1	6.99	7.18	7.18	7.06	6.93	7.12	7.33	7.65	7.47	7.71	7.81	7.37
Phenols	mg/L	N/A	0.01	0.004	< 0.001	0.006	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.012
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	0.51	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	0.6	1	0.8	1	0.7	0.6	0.8	0.6	0.6	0.8	0.8	0.6	0.7	4.8	4.4	3.7	4.5	6.6
Sodium	mg/L	200	12.6	12.7	11.9	12.9	11.1	9.1	9.3	8.7	8.6	9.3	6.8	7.8	6.4	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Sulphate	mg/L	500	9	24	< 1	2	< 1	< 1	< 1	1	< 1	< 1	3	2	2	9	8	9	6	3
TDS	mg/L	500	**643**	**650**	**588**	**561**	**574**	**554**	**524**	**605**	**578**	**645**	**544**	**562**	**527**	**960**	**918**	**814**	**926**	**920**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.07	**0.11**	0.09	0.09	0.1	0.1	0.1	0.1	0.1	0.07	0.06	0.07	0.06	0.05	0.05	0.04	0.04	0.08
Antimony	mg/L	0.006	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001
Arsenic	mg/L	0.025	0.0038	0.0037	0.002	0.0062	0.0027	0.0023	0.0086	0.0033	0.0042	0.0039	0.0045	0.0042	0.005	0.0023	0.0031	0.0012	0.0003	0.0019
Barium	mg/L	1	0.08	0.105	0.077	0.048	0.075	0.064	0.08	0.07	0.071	0.075	0.076	0.081	0.067	0.347	0.373	0.296	0.41	0.173
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.062	0.106	0.096	0.058	0.1	0.099	0.11	0.067	0.063	0.071	0.076	0.07	0.07	0.33	0.306	0.225	0.317	0.251
Cadmium	mg/L	0.005	< 0.000014	< 0.000014	0.000022	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	<0.000015	<0.000015	<0.000015	0.00003	< 0.00002	< 0.00002	< 0.00002	0.000014
Chromium	mg/L	0.05	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	<0.001	<0.001	<0.001	< 0.0002	0.0067	< 0.0002	0.0023	0.002
Cobalt	mg/L	N/A	< 0.005	< 0.005	0.0002	< 0.005	< 0.005	0.0003	0.005	< 0.005	0.005	< 0.005	0.0006	0.0005	0.0005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0022	0.0002	0.0002	0.0002	0.0003	0.0005	0.0018	0.0009	0.0002	0.0003	0.0002	0.0001	0.0003	0.0006	0.0007	0.0001	0.0007	0.0019
Lead	mg/L	0.01	0.0002	0.00011	< 0.00002	0.00002	< 0.00002	0.00004	0.00008	0.00004	< 0.00002	0.00007	<0.00002	<0.00004	<0.00002	0.0001	< 0.00002	< 0.00002	< 0.00002	0.00019
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0002	0.0003	0.0003	0.0002	0.0002	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0005	0.0005	0.0005	0.0006	0.0006	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0021	0.0008	0.001	0.01	< 0.01	0.01	0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.001	<0.001	<0.001	<0.001	0.007	0.005	0.003	0.006	< 0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001					
Strontium	mg/L	N/A	0.52	0.499	0.519	0.495	0.522	0.47	0.48	0.52	0.515	0.521	0.47	0.526	0.483	0.692	0.676	0.599	0.654	0.652
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0065	0.0026	0.0007	0.0006	0.0007	0.0007	0.0006	0.0006	0.0009	0.0008	0.0007	0.0008	0.0006	0.0033	0.0027	0.0009	0.0009	0.0084
Zinc	mg/L	5	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	16-91-I 17-Oct-17	16-91-I 8-May-18	16-91-I 11-Oct-18	16-91-I 9-May-19	16-91-I 8-Oct-19	16-91-I 5-May-20	16-91-I 13-Oct-20	16-91-I 4-May-21	16-91-I 13-Oct-21	16-91-I 3-May-22	16-91-I 25-Oct-22	16-91-I 2-May-23	16-91-I 18-Oct-23	16-91-I 6-May-24	16-91-I 16-Oct-24	16-91-II 29-May-15	16-91-II 15-Oct-15	16-91-II 17-May-16
Alkalinity	mg/L	500	352	344	340	308	307	308	316	355	395	405	425	413	417	498	374	**693**	477	**632**
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.56	0.38	0.44	0.37	0.4	0.34	0.47	0.46	0.58	2.29	1.07	1.08	1.11	2.84	0.91	4.66	7.86	4.46
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	176	163	168	161	163	145	156	148	160	172	173	171	186	182	167	273	202	198
COD	mg/L	N/A	76	56	67	74	56	62	59	74	90	105	95	84	111	100	176	57	97	68
Chloride	mg/L	250	223	**356**	**296**	**270**	**292**	239	**258**	**258**	**318**	**340**	**461**	**372**	**334**	**317**	**304**	89.3	**394**	170
Conductivity	umhos/cm	N/A	1600	1500	1560	1480	1440	1390	1410	1480	1610	1860	1910	1850	1800	2070	1730	1510	2120	1560
Cyanide	mg/L	0.2																		
DOC	mg/L	5	**11.3**	**11.6**	**8.8**	**10.7**	**8.7**	**5.9**	**5.3**	**6.5**	**5.7**	8	**5.7**	**6.7**	**10**	**14.8**	**14.1**	4.6	**8.1**	**10.3**
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	0.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	<0.7	<0.7	<0.1	0.1	0.1	0.1
Hardness	mg/L	500	**587**	**549**	**557**	**531**	**540**	481	**514**	496	**525**	**573**	**594**	**575**	**610**	**682**	**565**	**784**	**727**	**600**
Ion Balance	%	N/A						2.7	3.55	3.44	0.52	2.03	5.32	1.66	2.77	2.94	4.58			
Iron	mg/L	0.3	0.025	**0.674**	**0.533**	**0.893**	**6.04**	**3.15**	**3.17**	**2.95**	**3.37**	**2.68**	**6.05**	**0.865**	**8.8**	**11.4**	**9.48**	**43.2**	**20.6**	**20.4**
Magnesium	mg/L	N/A	35.7	34.4	33.3	31.3	32.2	28.8	30.2	30.6	30.5	34.9	39.2	36.1	35.3	55	35.8	24.7	53.7	25.4
Manganese	mg/L	0.05	0.021	0.023	0.03	0.023	0.027	0.029	0.027	0.031	0.037	0.037	0.039	0.039	0.049	0.046	0.034	**0.318**	**0.189**	**0.205**
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05	0.17	< 0.05	0.09	< 0.05	0.09	< 0.05	< 0.05	< 0.5	< 0.05	<0.40	<0.40	<0.05	< 0.1	0.1	< 0.1
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.11	< 0.05	< 0.05	0.24	< 0.05	< 0.5	< 0.05	<0.40	<0.40	<0.05	< 0.1	< 0.1	< 0.1
Tot Kjel N	mg/L	N/A	2.3	2	1.9	1.9	1.6	1.8	2	2	1.8	4.1	3.1	2.5	3.3	4.4	3.2	6.3	11	5.8
pH-Lab	pH unit	6.5-8.5	7.62	7.85	7.73	7.82	7.65	7.68	7.67	7.76	7.68	7.84	7.45	7.58	7.31	7.38	7.73	7.19	6.98	7.01
Phenols	mg/L	N/A	0.009	< 0.001	0.014	< 0.002	< 0.002	0.002	< 0.002	0.003	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	0.4	0.17	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	4.8	5	4.3	4.1	4.2	4	4.1	4.1	4.5	4.7	5.4	5.1	4.8	6.4	4.8	9.3	18.3	8.5
Sodium	mg/L	200	< 0.00002	< 0.0002	< 0.0001	103	103	89.4	98	120	140	152	159	149	138	154	131	45.3	127	54.3
Sulphate	mg/L	500	7	8	9	13	6	8	10	< 1	9	4	< 10	1	<2	10	2	4	3	2
TDS	mg/L	500	**778**	**891**	**826**	**769**	**792**	**702**	**749**	**778**	**904**	**956**	**1100**	**983**	**991**	**1140**	**951**	**912**	**1110**	**863**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.1	0.07	0.08	0.08	0.09	0.08	0.08	0.07	0.07	0.08	**0.11**	0.05	**0.11**	0.07	0.05	0.07	0.05	0.05
Antimony	mg/L	0.006	< 0.0001	< 0.0002	0.0001	< 0.0001	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0002	0.0001	<0.0001	0.0001	< 0.0001	0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0021	< 0.0005	0.0002	0.0003	0.0006	0.0006	0.0007	0.0005	0.0005	0.0002	0.0004	0.0002	0.0007	0.0002	0.0006	0.0074	0.0036	0.0023
Barium	mg/L	1	0.453	0.41	0.386	0.353	0.398	0.328	0.402	0.393	0.434	0.504	0.644	0.548	0.594	**1.07**	0.56	0.209	0.437	0.212
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.273	0.251	0.225	0.215	0.225	0.206	0.209	0.212	0.233	0.285	0.319	0.304	0.308	0.306	0.287	0.242	0.343	0.208
Cadmium	mg/L	0.005	< 0.000014	< 0.000059	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	0.00004	< 0.00002	< 0.00002
Chromium	mg/L	0.05	< 0.001	< 0.001	0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.0002	0.0143	< 0.0002
Cobalt	mg/L	N/A	< 0.005	< 0.0001	0.011	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	0.0001	0.0004	0.0003	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0005	0.0008	0.0003	0.001	0.0003	< 0.0001	0.0002	0.0009	0.0002	0.0008	0.0003	0.0001	0.0004	0.0002	0.0002	< 0.0001	0.0008	< 0.0001
Lead	mg/L	0.01	< 0.00002	< 0.0002	0.00004	0.00004	< 0.00009	0.00003	< 0.00004	0.00004	< 0.00004	< 0.00004	0.00005	< 0.00004	0.00034	<0.00002	<0.00002	0.00009	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	<0.00002	<0.00002	< 0.00002	< 0.00002	0.00003
Molybdenum	mg/L	N/A	0.0006	0.0012	0.0005	0.0003	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003	0.0002	0.0003	0.0004	0.0002	0.0006	< 0.0001	0.0002	0.0004
Nickel	mg/L	N/A	0.01	0.01	0.01	< 0.01	0.01	< 0.01	0.01	< 0.01	< 0.01	0.01	0.01	0.19	0.0122	0.0162	0.0119	< 0.01	0.02	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.002	0.003	0.002	0.002	0.002	0.001	0.002	0.003	0.003	0.005	0.004	0.002	0.003	0.002	0.002	0.004	0.001
Silver	mg/L	N/A				< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.632	0.613	0.569	0.602	0.595	0.535	0.558	0.551	0.584	0.647	0.724	0.668	0.668	1.49	0.647	0.733	0.864	0.624
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0008	< 0.0007	0.0002	0.0002	< 0.0004	0.0002	0.0002	0.0002	< 0.0001	0.0002	0.0003	0.0002	0.0007	0.0004	0.0003	0.0106	0.0056	0.003
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	0.006	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry
Summary - General Water Quality

Parameters	Units	ODWQS	16-91-II 13-Oct-16	16-91-II 23-May-17	16-91-II 17-Oct-17	16-91-II 8-May-18	16-91-II 11-Oct-18	16-91-II 9-May-19	16-91-II 5-May-20	16-91-II 13-Oct-20	16-91-II 4-May-21	16-91-II 2-May-23	16-91-II 18-Oct-23	16-91-II 6-May-24	16-91-II 16-Oct-24	17-91-I 26-May-15	17-91-I 13-Oct-15	17-91-I 19-May-16	17-91-I 13-Oct-16	17-91-I 23-May-17
Alkalinity	mg/L	500	466	389	456	**610**	**509**	**625**	**567**	Dry	**674**	**608**	Dry	**578**	Dry	305	310	300	309	302
Unionized Ammonia	mg/L	N/A	0.78																< 0.01	
Ammonia	mg/L	N/A	7.71	0.54	5.26	2.68	4.44	1.99	2.2		1.66	2.52		2.71		0.01	0.03	0.03	0.07	0.05
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	199	178	195	231	204	246	225		240	223		213		124	123	122	138	122
COD	mg/L	N/A	111	73	121	56	136	86	61		40	83		108		< 5	7	11	< 5	11
Chloride	mg/L	250	**437**	**271**	**316**	142	**456**	137	156		42.9	180		**260**		4.7	5.5	4.7	4.6	6
Conductivity	umhos/cm	N/A	2190	1650	2130	1490	2270	1530	1540		1300	1640		1930		669	693	661	718	657
Cyanide	mg/L	0.2																		
DOC	mg/L	5	**9.4**	**11.1**	**15.8**	**15.2**	**14.3**	**17.8**	**10.8**		**11.2**	**8.7**		**17.8**		1.8	1.9	1.6	2.6	1.6
Fluoride	mg/L	1.5	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1		< 0.1	< 0.1		<0.1		0.1	0.1	0.2	0.1	< 0.1
Hardness	mg/L	500	**753**	**593**	**740**	**701**	**759**	**744**	**677**		**670**	**631**		**630**		369	368	362	412	363
Ion Balance	%	N/A							7.99		7.04	5.27		3.9						
Iron	mg/L	0.3	**18.4**	**1.26**	0.028	**19.5**	**20.2**	**16.3**	**26.8**		**35.1**	**24.5**		**30.3**		0.201	**1.84**	**0.477**	**2.17**	**0.79**
Magnesium	mg/L	N/A	62	36.2	61.5	30.1	60.5	31.4	27.9		17	18.1		24.1		14.7	14.6	13.8	16.1	14
Manganese	mg/L	0.05	**0.155**	0.03	**0.126**	**0.345**	**0.123**	**0.359**	**0.212**		**0.214**	**0.197**		**0.176**		0.035	0.031	0.023	0.043	**0.082**
Nitrate	mg/L	10	< 0.1	< 0.05	0.92	< 0.05	< 0.05	0.18	0.09		0.05	< 0.05		<0.05		0.1	< 0.1	< 0.1	< 0.1	< 0.05
Nitrite	mg/L	1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06		< 0.05	< 0.05		<0.05		< 0.1	< 0.1	< 0.1	< 0.1	0.12
Tot Kjel N	mg/L	N/A	12.1	2.4	7.8	4	7.7	3.5	3.4		2.4	3.2		4.5		0.2	0.2	0.4	0.3	0.5
pH-Lab	pH unit	6.5-8.5	7.84	7.79	7.26	7.41	7.38	7.38	7.18		7.26	7.12		7.13		7.58	7.83	7.8	7.92	7.88
Phenols	mg/L	N/A	0.004	0.03	0.018	< 0.001	0.018	< 0.002	0.003		< 0.002	< 0.001		<0.001		< 0.001	< 0.001	< 0.001	0.004	0.005
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.08	< 0.1		< 0.1	< 0.1		<0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	17.7	4.3	17	9.8	14.4	7.8	7.1		4.6	6.2		6.6		0.9	0.8	0.8	0.8	0.7
Sodium	mg/L	200	161	128	164	72.9	197	85.4	77.2		33.4	118		140		< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Sulphate	mg/L	500	3	6	1	1	< 1	6	8		2	3		<1		52	62	52	71	45
TDS	mg/L	500	**1190**	**859**	**1036**	**876**	**1264**	**907**	**871**		**782**	**937**		**1060**		393	407	385	432	380
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.07	0.05	0.1	0.09	0.08	0.1	**0.11**		**0.12**	0.06		0.07		0.03	0.03	0.03	0.06	0.03
Antimony	mg/L	0.006	0.0003	0.0002	< 0.0001	< 0.0001	0.0002	< 0.0001	0.0001		0.0001	0.0002		<0.0001		< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001
Arsenic	mg/L	0.025	0.0116	0.0007	0.0033	0.0012	0.0047	0.0009	0.001		0.0088	**0.0331**		0.0013		0.0001	0.0002	< 0.0001	0.0002	0.0002
Barium	mg/L	1	0.557	0.414	0.489	0.266	0.575	0.29	0.23		0.139	0.239		0.314		0.061	0.067	0.064	0.071	0.06
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002		<0.0001		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.396	0.294	0.382	0.28	0.456	0.313	0.341		0.283	0.496		0.582		0.007	0.018	0.015	0.026	0.015
Cadmium	mg/L	0.005	< 0.00002	< 0.000014	< 0.000014	0.000058	< 0.000015	< 0.000015	< 0.000015		< 0.000015	< 0.000012		<0.000015		0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014
Chromium	mg/L	0.05	0.0034	0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001		< 0.001	0.001		<0.001		< 0.0002	0.004	< 0.0002	0.0018	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	0.0006	0.011	< 0.005	0.0019		0.005	< 0.005		0.0006		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0008	0.0035	0.0006	0.0011	0.0003	0.0009	< 0.0001		0.0007	0.0002		0.0002		0.0008	0.0001	0.0002	0.0002	0.0021
Lead	mg/L	0.01	0.00005	0.00024	< 0.00002	0.00005	< 0.00002	0.00003	0.00003		0.00004	< 0.00004		<0.00004		< 0.00002	< 0.00002	< 0.00002	0.00002	0.00014
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002		< 0.00002	< 0.00002		<0.00002		< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0001	0.0004	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0002		0.0003	0.0014		<0.0001		0.0003	0.0004	0.0006	0.0003	0.0005
Nickel	mg/L	N/A	0.02	0.01	0.03	< 0.01	0.03	< 0.01	0.01		< 0.01	0.06		0.0143		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	0.007	< 0.001	< 0.001	< 0.001	0.004	0.001	< 0.001		< 0.001	0.003		0.002		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001		<0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.897	0.664	0.884	0.671	0.894	0.726	0.644		0.575	0.586		0.608		0.273	0.283	0.268	0.295	0.264
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005		<0.00005		< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0014	0.0027	0.0015	0.0009	0.0007	0.001	0.0008		0.0003	0.0004		0.0009		0.0024	0.0016	0.0007	0.0007	0.0022
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		0.007	< 0.005		<0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	17-91-I 16-Oct-17	17-91-I 7-May-18	17-91-I 10-Oct-18	17-91-I 8-May-19	17-91-I 7-Oct-19	17-91-I 5-May-20	17-91-I 13-Oct-20	17-91-I 4-May-21	17-91-I 13-Oct-21	17-91-I 3-May-22	17-91-I 25-Oct-22	17-91-I 2-May-23	17-91-I 18-Oct-23	17-91-I 6-May-24	17-91-I (Dup) 6-May-24	17-91-I 16-Oct-24	17-91-II 26-May-15	17-91-II 13-Oct-15
Alkalinity	mg/L	500	406	294	302	279	304	285	286	293	294	278	279	282	301	290	289	282	425	400
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.05	0.05	0.05	0.05	0.04	0.02	0.05	0.04	0.05	0.3	0.05	0.62	1.24	0.41	<0.05	0.3	0.08	0.05
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	128	127	134	130	132	128	126	124	131	130	118	116	112	113	110	115	200	183
COD	mg/L	N/A	11	5	12	15	7	9	7	23	7	9	< 5	< 5	11	14	15	19	< 5	11
Chloride	mg/L	250	7.9	19.2	12.5	19.3	11.2	24.9	21.7	36.7	47.7	54.9	68.9	49.3	43.2	32.6	32.3	33.2	4.4	3.8
Conductivity	umhos/cm	N/A	694	670	747	717	744	745	753	747	752	802	766	760	766	743	726	724	917	853
Cyanide	mg/L	0.2																		
DOC	mg/L	5	2.5	2.9	3.4	2.8	3.5	4	3.3	3.1	1.9	2.3	1.1	2.2	2.9	4.1	2.4	3.2	2.3	1.9
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1
Hardness	mg/L	500	384	379	399	389	394	382	377	373	388	384	355	346	334	335	329	342	**536**	492
Ion Balance	%	N/A						3.69	2.23	0.0275	1.86	3.34	4.3	1.27	3.55	0.457	0.376	1.73		
Iron	mg/L	0.3	**1.77**	0.221	**2.18**	0.264	**0.591**	**1.07**	**0.818**	**0.84**	**2.08**	**1.04**	**0.98**	**1.12**	**0.715**	0.161	0.272	**0.476**	< 0.005	0.033
Magnesium	mg/L	N/A	15.6	15	15.6	15.5	15.6	15.1	15.1	15.4	14.7	14.4	14.6	13.4	13.2	13	12.8	13.4	8.94	8.49
Manganese	mg/L	0.05	0.039	0.038	0.041	0.047	0.017	**0.06**	0.022	0.014	0.036	0.028	0.02	0.044	0.022	0.007	0.013	0.022	0.021	0.039
Nitrate	mg/L	10	< 0.05	0.08	< 0.05	< 0.05	< 0.05	0.11	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.17	<0.05	<0.05	<0.05	2.5	1.9
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.1	< 0.05	< 0.05	< 0.05	0.06	<0.05	<0.05	<0.05	< 0.1	< 0.1
Tot Kjel N	mg/L	N/A	0.2	0.5	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.5	0.2	0.7	1.4	0.4	<0.1	0.5	0.4	0.5
pH-Lab	pH unit	6.5-8.5	7.8	7.87	7.69	7.91	7.78	7.71	7.66	7.87	7.72	7.76	7.68	7.73	7.45	7.69	7.8	7.88	7.37	7.63
Phenols	mg/L	N/A	0.002	< 0.001	0.004	< 0.002	< 0.002	0.003	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	0.61	0.17	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1	1.1	1.1	1	0.9	1	0.5	0.5
Sodium	mg/L	200	< 0.00002	< 0.0001	< 0.0001	11.4	12.9	12.3	13.5	13.7	16.7	20	20.6	20	20.5	21.3	21	20.4	8.7	9.6
Sulphate	mg/L	500	57	59	76	63	77	61	72	59	52	47	61	50	45	43	43	45	70	64
TDS	mg/L	500	467	409	435	408	433	414	422	427	441	436	453	420	401	388	378	377	**559**	**518**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.08	0.08	0.06	0.08	0.09	0.07	0.07	0.08	0.06	0.07	0.08	0.04	0.04	0.04	0.04	0.04	0.05	0.04
Antimony	mg/L	0.006	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	0.0001	0.0002	0.0001	< 0.0001	0.0001	< 0.0001	0.0003	0.0001	0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0003	0.0003
Barium	mg/L	1	0.071	0.065	0.069	0.063	0.067	0.063	0.065	0.06	0.073	0.069	0.072	0.067	0.063	0.072	0.072	0.065	0.055	0.055
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002
Boron	mg/L	5	0.024	0.016	0.022	0.02	0.018	0.019	0.022	0.017	0.019	0.015	< 0.005	0.017	0.016	0.014	0.013	0.014	< 0.005	0.014
Cadmium	mg/L	0.005	< 0.000014	< 0.000015	< 0.00002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	0.0058
Cobalt	mg/L	N/A	< 0.005	0.0005	< 0.005	0.005	< 0.005	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	0.0002	0.0002	0.0002	< 0.005	< 0.005
Copper	mg/L	1	0.0003	0.0001	0.0002	0.0005	0.0002	0.0004	0.0014	0.0005	0.0006	0.0003	0.0003	0.0007	0.0004	0.0003	<0.0001	0.0005	< 0.0001	0.0005
Lead	mg/L	0.01	0.00007	0.00003	< 0.00002	0.00003	< 0.00002	0.00003	0.00005	0.00007	< 0.00002	< 0.00002	0.00005	0.00003	<0.00002	0.00003	<0.00002	<0.00002	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0005	0.0009	0.0004	0.0004	0.0005	0.0005	0.0005	< 0.0001	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0003	<0.0002	<0.0002	0.0009	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.249	0.272	0.28	0.282	0.288	0.284	0.284	0.292	0.299	0.292	0.296	0.273	0.263	0.273	0.27	0.265	0.342	0.328
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0009	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0038	0.0023
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	17-91-II 19-May-16	17-91-II 13-Oct-16	17-91-II 23-May-17	17-91-II 16-Oct-17	17-91-II 7-May-18	17-91-II 10-Oct-18	17-91-II 8-May-19	17-91-II 7-Oct-19	17-91-II 5-May-20	17-91-II 13-Oct-20	17-91-II 4-May-21	17-91-II 13-Oct-21	17-91-II 3-May-22	17-91-II 25-Oct-22	17-91-II 2-May-23	17-91-II 18-Oct-23	17-91-II 6-May-24	17-91-II 16-Oct-24
Alkalinity	mg/L	500	441	367	403	385	386	360	367	356	345	344	345	341	357	342	385	383	360	361
Unionized Ammonia	mg/L	N/A		< 0.01																
Ammonia	mg/L	N/A	0.03	0.12	0.04	0.03	0.04	0.14	0.04	0.04	0.02	0.16	0.04	0.08	0.06	0.05	0.78	1.23	0.45	0.34
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	194	184	188	179	163	173	172	164	157	147	149	148	155	135	151	131	138	144
COD	mg/L	N/A	38	< 5	35	< 5	< 5	41	7	6	5	6	10	5	< 5	17	< 5	5	50	60
Chloride	mg/L	250	6.9	3.5	5.5	6	4.9	4.2	4.7	1.3	10.6	3.5	7.5	22.7	9.6	21.5	4.6	9.1	1.2	2.1
Conductivity	umhos/cm	N/A	930	810	847	837	784	830	821	798	776	774	732	746	817	767	795	788	732	749
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.6	2.3	1.5	2	2.2	3.3	2.8	2.9	3.5	3.3	3.4	2.6	2.7	1.6	2.5	3.2	2.7	2.7
Fluoride	mg/L	1.5	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1
Hardness	mg/L	500	**519**	499	**504**	483	439	466	463	443	423	398	402	399	418	369	406	356	371	388
Ion Balance	%	N/A									3.03	1.43	0.758	0.809	1.59	5.48	2.75	8.51	0.803	0.693
Iron	mg/L	0.3	< 0.005	0.24	< 0.005	0.011	0.055	0.02	0.019	0.011	0.005	0.012	< 0.005	0.017	0.021	< 0.005	< 0.005	<0.005	<0.005	0.083
Magnesium	mg/L	N/A	8.51	9.53	8.33	8.75	7.72	8.24	7.96	7.92	7.45	7.44	7.08	7.09	7.32	7.71	6.87	6.95	6.36	6.95
Manganese	mg/L	0.05	0.008	**0.13**	0.01	0.012	0.003	0.025	0.001	0.002	0.007	0.007	0.002	0.034	0.001	0.029	< 0.001	0.003	<0.001	0.009
Nitrate	mg/L	10	2.2	1.4	1.91	2.52	1.89	1.84	1.97	2.15	1.72	0.19	2.37	1.52	1.8	1.32	1.27	0.72	0.43	0.4
Nitrite	mg/L	1	< 0.1	< 0.1	0.17	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05
Tot Kjel N	mg/L	N/A	0.5	0.6	0.6	0.3	0.4	0.3	0.3	0.4	0.3	0.4	0.4	< 0.1	0.4	0.3	1.1	0.7	0.5	0.5
pH-Lab	pH unit	6.5-8.5	7.5	7.72	7.7	7.72	7.71	7.49	7.74	7.66	7.65	7.68	7.91	7.64	7.57	7.57	7.64	7.39	7.62	7.74
Phenols	mg/L	N/A	< 0.001	0.003	0.01	0.003	< 0.001	0.008	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.44	0.85	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1
Potassium	mg/L	N/A	0.5	0.5	0.4	0.6	0.5	0.6	0.4	0.5	0.4	0.5	0.4	0.5	0.4	0.5	0.5	0.6	0.4	0.7
Sodium	mg/L	200	8.7	9.1	7.8	8.4	6.8	8.7	6.2	8.6	6.8	8.1	5.7	7.6	6.5	8.6	5.3	8.5	4.8	6.7
Sulphate	mg/L	500	60	71	53	58	55	62	51	57	44	52	42	43	40	54	44	45	25	31
TDS	mg/L	500	**553**	**505**	**505**	492	470	473	463	453	434	425	419	433	433	433	443	413	382	391
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.05	0.08	0.05	0.1	0.1	0.08	0.09	0.09	0.08	0.08	0.08	0.06	0.08	0.09	0.04	0.04	0.05	0.08
Antimony	mg/L	0.006	< 0.0001	0.0002	< 0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	0.0003	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.025	< 0.0001	0.0004	0.0001	0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	0.0001
Barium	mg/L	1	0.057	0.055	0.051	0.058	0.049	0.052	0.047	0.05	0.044	0.045	0.041	0.047	0.044	0.048	0.045	0.041	0.047	0.043
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	0.013	0.021	0.013	0.017	0.015	0.013	0.014	0.014	0.013	0.013	0.014	0.014	0.008	< 0.005	0.013	0.011	0.011	0.012
Cadmium	mg/L	0.005	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.00002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.05	< 0.0002	0.0027	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	0.0006	0.012	0.014	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	<0.0001	0.0002	0.0003
Copper	mg/L	1	0.0004	0.0006	0.0023	0.0005	0.0005	0.0007	0.0007	0.0003	0.0008	0.0017	0.0007	0.0006	0.0005	0.0005	0.0008	0.0007	0.0003	0.0007
Lead	mg/L	0.01	< 0.00002	0.00004	0.00013	< 0.00002	0.00012	0.00006	0.00003	< 0.00002	0.00002	0.00005	< 0.00002	< 0.00002	0.00005	< 0.00002	< 0.00002	<0.00002	<0.00002	0.00013
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	<0.00002	<0.00002
Molybdenum	mg/L	N/A	0.0001	0.0001	0.0001	0.0001	< 0.0001	0.0001	< 0.0001	0.0002	< 0.0001	0.0001	0.0001	0.0004	0.0006	0.0002	0.0001	0.0002	0.0001	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0004	0.0003	0.0003
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001
Strontium	mg/L	N/A	0.336	0.316	0.318	0.28	0.288	0.281	0.291	0.282	0.267	0.257	0.27	0.266	0.268	0.27	0.27	0.239	0.251	0.249
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	N/A	0.001	0.0011	0.0036	0.0013	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	17-91-II (Dup) 16-Oct-24	18-91 26-May-15	18-91 13-Oct-15	18-91 12-May-16	18-91 13-Oct-16	18-91 24-May-17	18-91 16-Oct-17	18-91 7-May-18	18-91 9-Oct-18	18-91 8-May-19	18-91 7-Oct-19	18-91 5-May-20	18-91 13-Oct-20	18-91 4-May-21	18-91 13-Oct-21	18-91 3-May-22	18-91 25-Oct-22	18-91 2-May-23
Alkalinity	mg/L	500	358	288	301	297	278	281	309	306	247	263	277	276	274	270	304	291	312	298
Unionized Ammonia	mg/L	N/A					< 0.01													
Ammonia	mg/L	N/A	0.27	0.01	0.02	0.08	0.06	0.05	0.05	0.03	0.02	0.08	0.03	< 0.01	0.1	0.05	0.04	0.16	0.3	2.54
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	145	105	109	91.2	113	109	127	109	108	115	107	110	110	109	105	120	114	117
COD	mg/L	N/A	47	< 5	7	< 5	< 5	49	14	< 5	< 5	27	10	5	5	18	< 5	8	27	< 5
Chloride	mg/L	250	2.1	7.5	9.6	9.5	14.9	16.7	43.6	23.7	17.1	23.3	37.9	23.7	32.6	55.3	42.7	64.7	72	66.6
Conductivity	umhos/cm	N/A	733	617	627	624	611	626	722	613	585	643	683	646	674	695	694	789	778	789
Cyanide	mg/L	0.2																		
DOC	mg/L	5	4.5	1.4	0.8	0.9	1	0.7	1.5	1.3	1.9	1.9	1.9	2.4	2	2	1.6	1.3	0.6	1.4
Fluoride	mg/L	1.5	<0.1	0.1	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	392	320	331	282	343	332	386	334	325	350	326	331	330	332	318	357	343	349
Ion Balance	%	N/A	1.86											3.19	3.5	0.2	4.23	0.182	3.77	1.66
Iron	mg/L	0.3	0.048	0.092	0.169	0.063	0.033	0.135	0.045	0.036	0.072	0.032	0.062	0.016	0.061	0.068	0.297	**1.32**	0.068	0.054
Magnesium	mg/L	N/A	7.13	14	14.5	13	14.8	14.5	16.7	15	13.5	15.2	14.2	13.6	13.5	14.5	13.5	13.8	14.2	14.1
Manganese	mg/L	0.05	0.012	0.007	0.007	0.003	0.017	0.014	0.006	0.006	0.008	0.006	0.006	0.004	0.009	0.01	0.01	0.009	0.017	0.011
Nitrate	mg/L	10	0.41	< 0.1	0.1	0.1	0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.12	< 0.05	0.11	< 0.05	0.08	0.05	< 0.05
Nitrite	mg/L	1	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.5	0.4	0.2	0.3	0.3	0.4	0.3	0.2	0.2	0.4	0.4	0.3	0.2	0.4	0.8	0.3	0.7	2.6
pH-Lab	pH unit	6.5-8.5	7.83	7.73	7.85	7.86	7.91	7.96	7.84	7.87	7.93	7.96	7.82	7.82	7.78	7.96	7.82	7.76	7.67	7.79
Phenols	mg/L	N/A	<0.001	< 0.001	< 0.001	< 0.001	0.004	< 0.001	0.002	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	2.44	1.33	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	0.7	1	1.3	1	1.1	0.7	1.5	1.1	1.3	1.1	1.6	1.1	1.4	1.3	1.6	1.4	1.9	1.7
Sodium	mg/L	200	6.6	10.1	13.4	11.2	9.4	6.9	13.5	8.3	13.6	10.5	15.3	12.1	14.9	14.3	13.2	17.9	26.8	23.9
Sulphate	mg/L	500	29	34	24	24	22	23	25	31	24	29	22	26	20	17	15	17	22	23
TDS	mg/L	500	382	345	353	329	342	340	413	372	326	352	364	352	356	374	374	411	439	425
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.05	0.03	0.03	0.02	0.07	0.03	0.05	0.07	0.06	0.07	0.06	0.07	0.07	0.07	0.05	0.08	0.07	0.04
Antimony	mg/L	0.006	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	<0.0001	< 0.0001	0.0002	0.0001	0.0002	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001
Barium	mg/L	1	0.044	0.079	0.107	0.089	0.09	0.063	0.142	0.079	0.106	0.093	0.117	0.094	0.122	0.112	0.122	0.135	0.155	0.137
Beryllium	mg/L	N/A	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.013	< 0.005	0.013	< 0.005	0.014	0.006	0.014	0.009	0.012	0.012	0.013	0.008	0.014	0.011	0.012	0.012	< 0.005	0.012
Cadmium	mg/L	0.005	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010
Chromium	mg/L	0.05	<0.001	0.0035	0.0041	< 0.0002	0.0016	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.0003	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.007	0.01	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006
Copper	mg/L	1	0.0004	< 0.0001	0.0002	< 0.0001	0.0005	0.0003	0.0003	0.0006	0.0004	0.0006	0.0003	0.0005	0.0017	0.0008	0.0004	0.0004	0.0004	0.0007
Lead	mg/L	0.01	0.00007	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00014	0.00003	0.00005	0.00003	< 0.00002	0.00004	< 0.00002	< 0.00002
Mercury	mg/L	0.001	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0002	0.0004	0.0005	0.0003	0.0003	0.0003	0.0004	0.0004	0.0003	0.0005	0.0003	0.0004	0.0003	0.0004	0.0004	0.0003	0.0003
Nickel	mg/L	N/A	0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.25	0.239	0.253	0.193	0.239	0.228	0.251	0.239	0.229	0.247	0.245	0.239	0.245	0.261	0.251	0.264	0.284	0.276
Thallium	mg/L	N/A	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0001	0.0021	0.0016	< 0.0001	0.0006	0.0018	0.0007	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	18-91 18-Oct-23	18-91 6-May-24	18-91 16-Oct-24	19-91 26-May-15	19-91 13-Oct-15	19-91 12-May-16	19-91 13-Oct-16	19-91 24-May-17	19-91 16-Oct-17	19-91 8-May-18	19-91 9-Oct-18	19-91 8-May-19	19-91 8-Oct-19	19-91 5-May-20	19-91 13-Oct-20	19-91 4-May-21	19-91 13-Oct-21	19-91 3-May-22
Alkalinity	mg/L	500	326	292	307	348	357	352	359	359	361	360	386	331	329	349	342	333	329	334
Unionized Ammonia	mg/L	N/A							< 0.01											
Ammonia	mg/L	N/A	0.87	0.2	0.4	< 0.01	0.04	0.02	0.06	0.03	0.09	0.08	0.03	0.05	0.02	< 0.01	0.1	0.03	0.04	0.23
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	110	116	106	124	128	111	133	129	133	136	139	136	134	130	135	127	134	142
COD	mg/L	N/A	9	39	23	< 5	5	< 5	14	6	201	5	5	9	8	5	9	11	5	16
Chloride	mg/L	250	58.2	46.5	34.1	4.5	4.9	6.3	3	5.6	3.9	7.2	5.4	13.7	17.9	11	14.6	27.1	52.5	37.4
Conductivity	umhos/cm	N/A	815	756	724	705	723	716	720	719	703	697	662	731	729	737	754	736	791	842
Cyanide	mg/L	0.2																		
DOC	mg/L	5	2	3.6	1.8	1.5	0.8	2	1.1	0.8	1.8	2.2	2.3	2.3	2.6	3	2.2	2.8	2.4	2.9
Fluoride	mg/L	1.5	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	336	346	315	373	394	347	410	396	407	419	424	412	400	393	403	378	391	424
Ion Balance	%	N/A	6.75	0.239	2.18											2.24	3.67	0.812	0.772	3.68
Iron	mg/L	0.3	**0.445**	0.006	0.01	0.068	**0.668**	0.258	**0.451**	**0.345**	**0.401**	0.285	< 0.005	0.164	**0.604**	0.211	**0.494**	0.066	**0.53**	**0.747**
Magnesium	mg/L	N/A	14.8	13.8	12.3	15.7	17.7	16.6	18.6	17.7	18.2	19.2	18.5	17.6	15.7	16.6	15.9	14.6	13.7	16.8
Manganese	mg/L	0.05	0.01	0.004	0.003	0.026	0.032	0.025	**0.092**	**0.056**	0.036	**0.066**	0.004	0.044	0.031	0.026	0.031	0.026	0.026	0.031
Nitrate	mg/L	10	0.1	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.1	< 0.05	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.12	< 0.05
Tot Kjel N	mg/L	N/A	0.6	0.3	0.6	0.3	0.1	0.1	0.2	0.3	0.5	0.6	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.7
pH-Lab	pH unit	6.5-8.5	7.43	7.77	7.94	7.63	7.76	7.75	7.79	7.83	7.81	7.83	7.98	7.87	7.75	7.74	7.8	7.93	7.77	7.75
Phenols	mg/L	N/A	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	0.005	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001
Phosphorus	mg/L	N/A	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.37	0.36	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	1.7	1.3	1.8	1.3	1.4	1.2	1.4	1.2	1.5	1.6	1.7	1.5	1.8	1.5	1.6	1.6	2	1.7
Sodium	mg/L	200	16.5	18.7	19.7	6.1	7.1	7.1	6.3	6.7	6	7.1	6.5	8.2	8.6	8.4	9	13.2	22.8	19
Sulphate	mg/L	500	20	28	20	30	31	34	28	26	26	34	28	30	27	29	31	29	33	48
TDS	mg/L	500	429	395	377	390	406	389	407	403	406	421	431	406	403	406	413	413	456	466
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.05	0.04	0.03	0.04	0.03	0.05	0.04		0.07	0.08	0.07	0.08	0.08	0.08	0.08	0.07	0.04	0.08
Antimony	mg/L	0.006	0.0001	<0.0001	0.0001	< 0.0001	< 0.0001	0.0002	0.0001		0.0003	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0002	<0.0001	<0.0001	0.0003	0.0002	0.0003	0.0002		0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	< 0.0001	0.0001	0.0001
Barium	mg/L	1	0.136	0.132	0.134	0.106	0.086	0.109	0.104		0.125	0.111	0.119	0.117	0.125	0.112	0.13	0.12	0.14	0.132
Beryllium	mg/L	N/A	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.015	0.009	0.013	0.009	< 0.005	0.013	0.009		0.016	0.013	0.01	0.015	0.02	0.014	0.018	0.017	0.02	0.014
Cadmium	mg/L	0.005	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014		< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	<0.001	<0.001	<0.001	0.0054	< 0.0002	0.0018	0.001		< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	<0.0001	0.0002	0.0002	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	0.0016	< 0.005	< 0.005	< 0.005	0.0007	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0005	0.0003	0.0008	0.0002	< 0.0001	0.0003	0.003		< 0.0001	0.0001	0.0005	0.0005	0.0002	0.0005	0.0014	0.0008	0.0006	0.0003
Lead	mg/L	0.01	0.0001	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	0.00022		< 0.00002	0.00003	0.00003	< 0.00002	< 0.00002	0.00002	0.00005	0.00002	0.00002	< 0.00002
Mercury	mg/L	0.001	0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002		< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0003	0.0005	0.0003	0.001	0.0003	0.0003		0.0003	0.0003	0.0003	0.0002	0.0003	0.0002	0.0003	0.0002	0.0003	0.0004
Nickel	mg/L	N/A	0.0003	0.0003	0.0003	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002		< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.259	0.267	0.242	0.291	0.236	0.286	0.279		0.259	0.293	0.299	0.301	0.307	0.294	0.298	0.314	0.322	0.323
Thallium	mg/L	N/A	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0001	<0.0001	<0.0001	0.0021	< 0.0001	0.0007	0.0026		0.0009	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry
Summary - General Water Quality

Parameters	Units	ODWQS	19-91 25-Oct-22	19-91 2-May-23	19-91 18-Oct-23	19-91 6-May-24	19-91 16-Oct-24	20-91-I 26-May-15	20-91-I 13-Oct-15	20-91-I 24-May-16	20-91-I 13-Oct-16	20-91-I 23-May-17	20-91-I 16-Oct-17	20-91-I 7-May-18	20-91-I 8-May-19	20-91-I 5-May-20	20-91-I 13-Oct-20	20-91-I 4-May-21	20-91-I 13-Oct-21	20-91-I 25-Oct-22
Alkalinity	mg/L	500	334	339	361	340	331	291	313	320	316	326	351	393	324	355	306	226	228	215
Unionized Ammonia	mg/L	N/A									0.05									
Ammonia	mg/L	N/A	0.05	1.21	0.69	1	0.94	1.7	2.52	2.53	3.45	1.87	3.11	1.91	4.71	1.92	5.49	2.93	1.38	2.71
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	133	131	128	130	137	56.1	56.6	58.3	52.7	60.7	61.1	63.2	52	61	49.5	42.2	53.3	44.2
COD	mg/L	N/A	24	6	12	42	25	32	20	36	10	32	45	17	23	50	67	53	9	9
Chloride	mg/L	250	60.5	44.4	43	42.9	36.4	69.3	70.9	67.9	66.6	53.4	54.3	59.7	69.4	56.9	63.3	73.2	85.3	94.8
Conductivity	umhos/cm	N/A	839	856	863	849	822	766	796	797	804	774	825	838	863	836	801	655	678	641
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.1	2.6	3.1	4	3	1.6	1.8	2.6	2.5	2.3	3.7	4.3	4.9	**5.2**	3.8	1.4	1.2	0.4
Fluoride	mg/L	1.5	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.5	0.6	0.6	0.6	0.8	0.6	0.2	0.2	< 0.1	< 0.1	< 0.1	< 0.1	0.2
Hardness	mg/L	500	403	395	372	390	413	304	307	322	296	337	339	363	290	347	265	221	275	231
Ion Balance	%	N/A	2.95	1.26	1.46	0.0925	4.52									2.45	3.45	0.203	1.53	2.71
Iron	mg/L	0.3	**0.72**	**0.347**	**0.437**	0.268	**0.69**	0.176	0.264	0.064	**0.549**	0.228	**0.526**	0.296	**0.949**	**0.342**	0.259	**0.481**	0.138	**0.501**
Magnesium	mg/L	N/A	17.1	16.8	12.7	16.1	17	39.9	40.2	42.9	40	45.1	45.3	49.8	39	47.4	34.4	28.1	34.5	29.4
Manganese	mg/L	0.05	0.025	0.038	0.024	0.033	0.029	0.007	0.014	0.01	0.044	0.046	**0.172**	**0.088**	**0.054**	0.014	0.028	0.038	0.012	0.037
Nitrate	mg/L	10	< 0.05	< 0.05	0.06	<0.05	<0.05	< 0.1	0.1	0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	0.12	< 0.05	0.11	< 0.05	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.09	< 0.05
Tot Kjel N	mg/L	N/A	0.3	1.2	0.9	1	1	2.1	3.1	2.9	3.6	2.2	3.2	2.2	5.1	2.6	6.3	3.5	1.5	2.8
pH-Lab	pH unit	6.5-8.5	7.69	7.76	7.54	7.78	7.9	7.75	7.95	7.74	8.11	8.03	7.98	8.05	8.01	7.86	7.87	8.16	7.89	7.86
Phenols	mg/L	N/A	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.003	0.003	0.003	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	0.002	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.36	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2	1.9	2	1.8	1.9	6.9	7.3	7.8	8.4	8.2	8.8	10.1	9.5	8.8	8.5	5.8	5.9	5.9
Sodium	mg/L	200	22.8	23.1	37.6	23.3	21.9	41.2	48.1	49.2	69.7	53.3	53.3	52.2	72.6	45.1	70	43.5	35.4	39.3
Sulphate	mg/L	500	63	56	48	46	41	6	3	5	5	3	7	6	4	6	5	7	6	4
TDS	mg/L	500	499	476	456	448	433	397	416	424	437	423	446	480	448	441	415	339	358	351
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.09	0.05	0.04	0.04	0.04	0.02	0.02	0.02	0.09	0.02	0.04	0.04	0.03	0.03	0.04	0.03	0.03	0.02
Antimony	mg/L	0.006	< 0.0001	< 0.0001	0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0001	0.0001	0.0002	0.0001	0.0001	0.0005	0.0007	0.0008	0.0007	0.0002	0.0003	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	0.147	0.13	0.131	0.149	0.128	0.517	0.557	0.651	0.568	0.711	0.724	0.807	0.584	0.729	0.554	0.205	0.181	0.163
Beryllium	mg/L	N/A	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	< 0.005	0.016	0.017	0.013	0.017	0.279	0.3	0.36	0.345	0.415	0.399	0.442	0.339	0.43	0.307	0.158	0.189	0.153
Cadmium	mg/L	0.005	< 0.000010	0.00001	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010
Chromium	mg/L	0.05	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0038	0.0044	< 0.0002	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	0.005	0.0004	0.0012	0.0005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0004	0.0008	0.0006	0.0005	0.0006	< 0.0001	0.0003	0.0015	0.0003	0.0003	0.0003	0.0003	0.0004	0.0001	0.0003	0.0002	< 0.0001	0.0002
Lead	mg/L	0.01	< 0.00002	0.00005	<0.00002	<0.00002	<0.00002	< 0.00002	0.00006	< 0.00002	0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00025	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0003	0.0002	0.0003	0.0003	< 0.0001	< 0.0001	0.0002	0.0001	0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	0.0003	0.0002	< 0.0001	0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	0.0008	0.0006	0.0004	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	0.002	0.003	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.002	0.002
Silver	mg/L	N/A	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.337	0.321	0.292	0.319	0.31	3.72	3.71	4.3	3.69	4.61	3.79	4.82	3.64	4.88	3.38	2.11	2.49	2.08
Thallium	mg/L	N/A	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0023	0.0015	0.0015	0.0009	0.0023	0.0009	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	20-91-I 2-May-23	20-91-I 18-Oct-23	20-91-I 6-May-24	20-91-I 16-Oct-24	20-91-II 26-May-15	20-91-II 13-Oct-15	20-91-II 24-May-16	20-91-II 13-Oct-16	20-91-II 23-May-17	20-91-II 16-Oct-17	20-91-II 7-May-18	20-91-II 9-Oct-18	20-91-II 8-May-19	20-91-II 7-Oct-19	20-91-II 5-May-20	20-91-II 13-Oct-20	20-91-II 4-May-21	20-91-II 13-Oct-21
Alkalinity	mg/L	500	224	234	275	247	394	400	382	382	399	399	401	397	389	391	402	376	376	339
Unionized Ammonia	mg/L	N/A								< 0.01										
Ammonia	mg/L	N/A	7.96	6.52	4.52	8.56	1.62	0.95	0.74	0.83	0.7	0.73	0.57	1.71	1.32	0.76	0.62	0.56	0.5	0.41
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	46.5	28.8	44.2	35.8	93.8	99.2	95.5	95.4	94.3	103	97	98.4	105	108	114	97.7	84.7	75.6
COD	mg/L	N/A	17	13	40	25	24	28	49	20	47	36	39	46	50	40	47	33	33	19
Chloride	mg/L	250	79.8	53.7	58.2	55.4	66.2	77.4	70.6	70.5	69.4	82	88.8	104	97.2	107	100	91.6	89.7	80.7
Conductivity	umhos/cm	N/A	668	630	727	676	917	955	896	919	968	998	962	1090	1030	1030	1060	992	936	832
Cyanide	mg/L	0.2																		
DOC	mg/L	5	0.7	3.3	4.6	3.2	3	4.4	**5.5**	**5.6**	**7.4**	**7.7**	**8.6**	**8.3**	**8.2**	**8.6**	**10.5**	**6.7**	**5.5**	2.9
Fluoride	mg/L	1.5	0.6	<0.1	0.4	<0.1	0.4	0.4	0.4	0.4	0.7	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	247	116	237	175	437	454	438	442	435	484	460	470	486	493	**508**	454	403	351
Ion Balance	%	N/A	2.17	8.47	1.05	3.48											7.57	4.56	0.223	1.33
Iron	mg/L	0.3	0.09	**0.873**	0.131	**0.796**	**0.779**	**1.07**	**0.557**	**0.973**	**0.677**	**0.691**	**0.749**	**0.423**	**0.573**	**0.665**	< 0.005	**0.529**	**0.841**	0.273
Magnesium	mg/L	N/A	31.9	10.8	30.7	20.7	49.2	50.1	48.6	49.5	48.6	55	52.8	54.4	54.5	54.2	54.3	51	46.5	39.4
Manganese	mg/L	0.05	0.013	**0.109**	**0.07**	**0.153**	0.014	0.013	0.012	0.013	0.011	0.013	0.015	0.012	0.014	0.012	0.012	0.01	0.01	0.012
Nitrate	mg/L	10	< 0.05	0.07	<0.05	<0.05	0.1	< 0.1	0.1	0.4	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.09	< 0.05	0.1	< 0.05
Nitrite	mg/L	1	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05	< 0.05	0.12
Tot Kjel N	mg/L	N/A	9.2	6.5	4.5	9.2	2.5	1.7	1.2	1.5	2	1.7	4	2.7	2.5	1.6	1.8	1.4	1.2	0.8
pH-Lab	pH unit	6.5-8.5	7.92	7.7	7.9	8.04	7.61	7.76	7.6	8	7.94	7.8	7.75	8.13	7.85	7.7	7.71	7.88	8.08	7.78
Phenols	mg/L	N/A	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.003	0.008	0.007	< 0.001	0.007	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001
Phosphorus	mg/L	N/A	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.41	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	6	5.5	7.2	6.8	4	3.8	3.7	3.6	3.5	4.1	4.9	4.2	4.4	4.4	4.5	4	3.9	3.9
Sodium	mg/L	200	33.7	66.7	49.8	55.5	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	42.6	45.9	54.8	43.7	43.6	38.4
Sulphate	mg/L	500	5	12	8	6	2	1	1	35	2	2	2	2	1	< 1	2	2	2	< 1
TDS	mg/L	500	338	327	379	351	483	**504**	479	**518**	491	**523**	**527**	**545**	**541**	**555**	**572**	**516**	497	442
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.01	<0.01	0.02	0.01	0.03	0.03	0.03	0.02	0.03	0.06	0.06	0.05	0.06	0.07	0.03	0.06	0.06	0.04
Antimony	mg/L	0.006	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	0.0002
Arsenic	mg/L	0.025	< 0.0001	0.0002	<0.0001	<0.0001	0.0004	0.0007	0.0006	0.0008	0.0003	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	0.214	0.112	0.472	0.267	**1.96**	**2.06**	**1.94**	**1.91**	**1.86**	**2.15**	**1.98**	**1.86**	**1.89**	**1.93**	**2.12**	**1.94**	**1.73**	**1.53**
Beryllium	mg/L	N/A	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.193	0.081	0.258	0.167	0.113	0.122	0.125	0.127	0.127	0.155	0.143	0.15	0.154	0.163	0.167	0.161	0.157	0.165
Cadmium	mg/L	0.005	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	0.000021	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	<0.001	<0.001	<0.001	0.0047	0.0057	< 0.0002	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	0.0001	<0.0001	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.013	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0004	0.0004	<0.0001	0.0007	< 0.0001	0.0001	0.0007	0.0005	0.0024	0.0002	0.0005	0.0008	0.0004	0.0002	0.0002	0.0053	< 0.0001	0.0005
Lead	mg/L	0.01	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00023	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00004	< 0.00004	0.00004	< 0.00004	< 0.00002
Mercury	mg/L	0.001	< 0.00002	0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0001	0.0006	0.0001	0.0003	< 0.0001	0.0001	0.0002	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	0.0001	< 0.0001
Nickel	mg/L	N/A	< 0.01	0.0005	0.0006	0.0006	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	0.002	<0.001	<0.001	<0.001	< 0.001	0.001	0.002	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001
Silver	mg/L	N/A	< 0.0001	<0.0001	<0.0001	<0.0001									< 0.0001	< 0.0001	0.0008	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	2.39	0.889	3.03	1.89	2.39	2.38	2.28	2.17	2.3	2.15	2.35	2.31	2.3	2.31	2.35	2.32	2.16	1.95
Thallium	mg/L	N/A	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	<0.0001	<0.0001	<0.0001	0.0028	0.0022	0.0018	0.0008	0.0024	0.0009	0.0001	0.0001	< 0.0001	< 0.0001	0.0004	0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	0.011	< 0.005	< 0.005	0.015	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	20-91-II 3-May-22	20-91-II 25-Oct-22	20-91-II 2-May-23	20-91-II 18-Oct-23	20-91-II 6-May-24	20-91-II 16-Oct-24	20-91-III 26-May-15	20-91-III 13-Oct-15	20-91-III 24-May-16	20-91-III 13-Oct-16	20-91-III 23-May-17	20-91-III 16-Oct-17	20-91-III 7-May-18	20-91-III 9-Oct-18	20-91-III 8-May-19	20-91-III 7-Oct-19	20-91-III 5-May-20	20-91-III 13-Oct-20
Alkalinity	mg/L	500	284	321	292	331	333	341	390	398	383	390	390	386	386	344	358	367	369	363
Unionized Ammonia	mg/L	N/A										< 0.01								
Ammonia	mg/L	N/A	0.61	0.55	1.61	0.81	0.56	0.64	0.18	0.22	0.2	0.21	0.19	0.21	0.22	0.24	0.32	0.36	0.41	0.51
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	72.5	75.1	66.4	72.1	74.8	82.7	116	134	124	138	120	126	115	116	118	127	116	122
COD	mg/L	N/A	19	8	14	26	36	33	32	50	36	32	29	29	32	28	29	28	51	36
Chloride	mg/L	250	82.7	108	83.2	70.8	72.8	76.2	88.4	96.6	91	98.3	74.4	78.9	68.9	78.6	81	104	86.2	95.3
Conductivity	umhos/cm	N/A	806	834	788	819	863	861	1010	1030	963	1050	982	974	893	927	955	1000	963	1000
Cyanide	mg/L	0.2																		
DOC	mg/L	5	2.8	2.1	1.7	**5.2**	**6.5**	**6.6**	3.5	**5.6**	**7.3**	**7.3**	**9.1**	**8.1**	**7.9**	9	**8.7**	**9.4**	**9.2**	**7.9**
Fluoride	mg/L	1.5	< 0.1	0.2	0.5	<0.1	0.4	0.1	0.2	0.2	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	337	365	321	342	360	390	402	458	427	479	420	442	410	416	420	455	414	438
Ion Balance	%	N/A	3.3	2.32	1.12	1.37	1.05	2.28											2.81	6.47
Iron	mg/L	0.3	**0.506**	**0.36**	**0.393**	**0.336**	0.119	0.295	**3.88**	**3.07**	**2.74**	**3.42**	**2.9**	**2.61**	**2.4**	**2.79**	**2.5**	**3.55**	**2.46**	**3.4**
Magnesium	mg/L	N/A	38	43.1	37.8	39.4	42	44.5	27.1	29.9	28.4	32.8	29.2	30.9	29.8	30.6	30.5	33.4	30.1	32.3
Manganese	mg/L	0.05	0.01	0.011	0.01	0.011	0.01	0.011	**0.07**	0.044	**0.055**	0.049	0.039	0.04	0.033	0.041	0.039	0.039	0.029	0.037
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05	0.07	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.09	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.9	1	1.9	1.4	1.4	1.5	1.3	1.2	0.8	0.9	0.8	0.7	1	0.8	0.8	1	1.1	1.2
pH-Lab	pH unit	6.5-8.5	7.74	7.72	7.9	7.57	7.9	7.98	7.41	7.63	7.43	7.96	7.78	7.73	7.68	8.07	7.84	7.66	7.68	7.73
Phenols	mg/L	N/A	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.002	0.015	0.01	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.04	0.05	< 0.1	< 0.1
Potassium	mg/L	N/A	3.9	4.3	4.1	4.1	4.2	4.2	2.1	2.1	2.2	2.2	2.1	2.4	2.7	2.4	2.6	2.9	2.7	2.8
Sodium	mg/L	200	35.1	36.1	33.9	33.2	35.2	34.3	40.7	43.7	45	52.4	42.4	39.4	42.5	41.6	43.9	52.6	47.5	56.6
Sulphate	mg/L	500	< 1	< 1	< 1	4	<1	2	3	6	2	3	7	8	10	7	7	3	8	6
TDS	mg/L	500	406	460	402	431	456	455	**516**	**554**	**525**	**565**	**512**	**520**	**503**	486	**501**	**547**	**515**	**536**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.06	0.06	0.02	0.02	0.03	0.02	0.03	0.04	0.03	0.04	0.04	0.07	0.07	0.06	0.07	0.08	0.07	0.08
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0006	0.0014	0.0009	0.001	0.0003	0.0004	< 0.0001	0.0001	0.0001	< 0.0001	< 0.0001	0.0001
Barium	mg/L	1	**1.4**	**1.66**	**1.42**	**1.47**	**1.81**	**1.66**	0.273	0.311	0.303	0.322	0.282	0.327	0.3	0.279	0.287	0.335	0.285	0.332
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.168	0.163	0.163	0.168	0.163	0.164	0.048	0.071	0.084	0.088	0.083	0.093	0.089	0.091	0.107	0.125	0.122	0.144
Cadmium	mg/L	0.005	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	0.000018	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0045	0.0058	< 0.0002	0.0026	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	<0.0001	0.0001	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.006	< 0.005	< 0.005	< 0.0001	< 0.005
Copper	mg/L	1	0.0002	0.0004	0.0006	0.0002	0.0002	0.0009	< 0.0001	0.0002	0.0008	0.0002	0.0018	0.0002	0.0003	0.0003	0.0004	0.0002	0.0002	0.0036
Lead	mg/L	0.01	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00016	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00004	0.00003	0.00003
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	0.00003	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0001	0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	0.0016	0.0023	0.0028	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	0.002	0.002	0.002	<0.001	<0.001	<0.001	< 0.001	0.002	0.003	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	0.00007	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.96	2.26	2.06	2.1	2.28	2.25	0.559	0.608	0.565	0.613	0.581	0.516	0.547	0.557	0.585	0.653	0.578	0.619
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0027	0.0023	0.002	0.0009	0.0025	0.0009	0.0001	0.0001	0.0001	< 0.0001	0.0001	0.0002
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	20-91-III 4-May-21	20-91-III 13-Oct-21	20-91-III 3-May-22	20-91-III 25-Oct-22	20-91-III 2-May-23	20-91-III 18-Oct-23	20-91-III 6-May-24	20-91-III 16-Oct-24	21-91-I 26-May-15	21-91-I 13-Oct-15	21-91-I 17-May-16	21-91-I 12-Oct-16	21-91-I 23-May-17	21-91-I 17-Oct-17	21-91-I 8-May-18	21-91-I 11-Oct-18	21-91-I 9-May-19	21-91-I 8-Oct-19
Alkalinity	mg/L	500	351	361	343	380	378	394	353	358	**578**	**577**	**574**	**545**	**590**	**542**	**543**	**573**	**542**	**537**
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.37	0.49	0.64	0.72	1.09	0.95	0.48	0.73	2.41	2.03	2.16	2.22	2.09	2.07	2.1	2.07	2.18	2.19
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	108	113	117	111	111	114	113	118	177	181	155	182	178	243	173	185	179	189
COD	mg/L	N/A	29	32	23	23	20	27	27	21	82	68	75	71	77	72	76	82	86	74
Chloride	mg/L	250	77.1	76.3	76.1	126	99.2	76.3	60.2	76.6	**664**	**486**	**449**	**565**	**366**	93.7	**556**	**498**	**531**	**520**
Conductivity	umhos/cm	N/A	888	885	933	987	1010	965	888	929	2920	2470	2510	4710	2450	3920	2280	2380	2670	2390
Cyanide	mg/L	0.2																		
DOC	mg/L	5	**6.3**	4.8	**6.2**	4.1	**6.6**	**7.7**	**6.8**	**7.7**	3.6	**5.1**	**7.2**	**5.6**	**10.2**	**11.6**	**12.2**	**10.3**	**11.4**	**9.4**
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.3	0.3	0.3	0.4	< 1	< 0.1	< 0.1	< 0.1	0.4	< 1
Hardness	mg/L	500	379	392	398	394	387	392	383	402	**891**	**909**	**781**	**928**	**886**	**1220**	**893**	**927**	**900**	**953**
Ion Balance	%	N/A	1.76	1.45	5.07	3.04	1.75	2.55	0.673	1.83										
Iron	mg/L	0.3	**1.82**	**2.04**	**1.98**	**2.43**	**2.44**	**1.85**	**1.45**	**1.59**	**0.933**	**0.536**	**0.559**	**0.367**	0.178	0.02	**0.453**	**0.33**	0.17	**0.426**
Magnesium	mg/L	N/A	26.6	26.6	25.7	28.4	26.7	26.1	24.5	25.9	109	111	95.6	115	107	149	112	113	110	117
Manganese	mg/L	0.05	0.027	0.047	**0.069**	**0.09**	**0.064**	**0.064**	**0.053**	**0.074**	0.011	0.01	0.008	0.011	0.008	0.016	0.01	0.01	0.011	0.009
Nitrate	mg/L	10	0.11	< 0.05	< 0.05	< 0.05	< 0.05	0.06	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.05	< 0.05	< 0.05	0.17	< 0.5
Nitrite	mg/L	1	< 0.05	0.08	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5
Tot Kjel N	mg/L	N/A	0.9	1	1.2	1.3	1.1	1.5	0.8	1.1	4.1	3.7	3.6	3.5	3.5	3.5	3.4	3.5	3.6	3.6
pH-Lab	pH unit	6.5-8.5	8.06	7.71	7.69	7.59	7.74	7.46	7.71	7.84	7.38	7.28	7.5	7.36	7.63	7.43	7.52	7.58	7.57	7.53
Phenols	mg/L	N/A	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.009	0.029	0.019	< 0.001	0.017	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.12	0.22
Potassium	mg/L	N/A	2.6	2.7	2.7	3.2	3.1	2.8	2.6	2.8	10.4	10.3	8.9	10.3	9.9	16.7	12.8	11.2	11.9	12.4
Sodium	mg/L	200	45.9	44.8	47	57.3	50.6	40.2	32.7	38.2	178	163	141	158	151	**355**	166	161	175	173
Sulphate	mg/L	500	11	16	11	8	7	13	17	9	2	< 1	1	2	< 10	< 1	1	1	3	< 10
TDS	mg/L	500	484	499	488	**565**	**527**	**514**	470	493	**1490**	**1300**	**1200**	**1360**	**1170**	**1186**	**1350**	**1317**	**1338**	**1336**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.07	0.05	0.07	0.07	0.06	0.04	0.05	0.04	0.05	0.05	0.04	0.05	0.05	**0.12**	0.08	0.08	0.09	0.1
Antimony	mg/L	0.006	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	0.0031	0.0023	< 0.0001	0.001	0.0018	< 0.0005	< 0.0001	< 0.0001	< 0.0003
Barium	mg/L	1	0.264	0.28	0.285	0.35	0.315	0.272	0.286	0.272	0.846	0.926	0.781	0.93	0.907	0.976	0.958	0.978	0.946	**1.03**
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.121	0.127	0.119	0.136	0.122	0.109	0.078	0.085	0.475	0.505	0.408	0.533	0.515	0.565	0.531	0.524	0.552	0.574
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	0.000092	< 0.000015	< 0.000015	< 0.000029
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0111	0.0131	< 0.0002	0.0037	0.002	< 0.001	< 0.001	0.001	< 0.001	0.002
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	0.0002	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0001	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0006	0.0002	0.0001	0.0002	0.0007	0.0002	<0.0001	0.0006	0.0002	0.0008	0.0002	0.0007	0.0008	0.0006	0.0014	0.0002	0.0013	0.0006
Lead	mg/L	0.01	0.00002	0.00003	< 0.00002	< 0.00002	0.0005	<0.00002	0.00005	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0002	< 0.00002	0.00002	< 0.00009
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	<0.00002	<0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0004	< 0.0001	< 0.0001	< 0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.004	0.0027	0.0039	< 0.01	< 0.01	< 0.01	< 0.01	0.01	0.01	0.01	0.01	< 0.01	0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	0.001	0.001	0.001	<0.001	<0.001	<0.001	< 0.001	0.008	0.007	**0.012**	< 0.001	0.002	< 0.002	0.006	0.005	0.006
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0002	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.609	0.625	0.585	0.666	0.601	0.541	0.522	0.54	10.5	11.2	9.18	10.8	10.6	15.5	10.6	10.6	11.2	11.5
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0001	< 0.0001	0.0001	0.0002	0.0002	0.0001	0.0001	<0.0001	0.0063	0.0049	0.0016	0.0015	0.0043	0.0011	< 0.0007	0.0003	0.0002	< 0.0004
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	21-91-I 5-May-20	21-91-I 13-Oct-20	21-91-I 4-May-21	21-91-I 13-Oct-21	21-91-I 3-May-22	21-91-I 25-Oct-22	21-91-I 2-May-23	21-91-I 18-Oct-23	21-91-I 6-May-24	21-91-I 16-Oct-24	21-91-II 26-May-15	21-91-II 13-Oct-15	21-91-II 17-May-16	21-91-II 12-Oct-16	21-91-II 23-May-17	21-91-II 17-Oct-17	21-91-II 8-May-18	21-91-II 11-Oct-18
Alkalinity	mg/L	500	**533**	**529**	**550**	**557**	**505**	**510**	496	**528**	**509**	467	412	393	382	402	432	415	390	403
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	2.08	2.23	2.2	2.15	2.35	2.28	3.35	2.57	2.37	1.61	1.32	0.82	1.24	1.48	1.46	1.11	1.2	1.36
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	173	178	172	183	178	184	161	168	169	190	75.7	73.9	60.8	73.9	79.5	83	71.8	81.1
COD	mg/L	N/A	93	106	81	71	65	79	63	69	80	88	30	81	26	22	70	37	18	32
Chloride	mg/L	250	**481**	**495**	**476**	**535**	**489**	**598**	**581**	**535**	0	**297**	198	169	174	201	186	188	175	204
Conductivity	umhos/cm	N/A	2380	2370	2420	2360	2450	2750	2530	2570	2530	1920	1390	1270	1250	1390	1450	1350	1220	1370
Cyanide	mg/L	0.2																		
DOC	mg/L	5	**8.5**	**6.1**	7	**5.3**	**6.2**	3.5	**5.4**	**7.2**	**10.3**	**16.6**	2.4	2	3.8	4.3	**6.1**	**5.5**	**5.9**	6
Fluoride	mg/L	1.5	< 1	< 0.1	0.2	< 0.1	< 0.5	< 1	< 0.1	<0.7	0	<0.7	**1.6**	**1.7**	**1.7**	**1.8**	**1.9**	**1.8**	1.4	1.1
Hardness	mg/L	500	**889**	**905**	**907**	**918**	**889**	**881**	**818**	**847**	**879**	**699**	413	386	328	410	416	455	396	443
Ion Balance	%	N/A	1.18	1.5	2.32	0.988	1.87	0.26	2.76	0.493	1.16	5.83								
Iron	mg/L	0.3	0.271	0.275	**0.316**	**0.306**	0.221	< 0.005	**6.48**	**4.39**	**1.02**	**6.39**	**1.29**	**2.56**	0.131	**0.474**	**0.313**	**1.27**	0.02	**0.961**
Magnesium	mg/L	N/A	111	112	116	112	108	116	101	104	111	54.5	54.4	49	42.9	54.7	52.8	60.2	52.7	58.4
Manganese	mg/L	0.05	0.008	0.008	0.009	0.01	0.009	0.015	0.034	0.023	0.011	0.033	0.013	0.017	0.012	0.016	0.015	0.013	0.012	0.01
Nitrate	mg/L	10	0.82	< 0.05	0.11	< 0.05	< 0.3	< 0.5	< 0.05	<0.40	0	<0.40	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	< 0.5	0.11	< 0.05	0.26	< 0.3	< 0.5	< 0.05	<0.40	0	<0.40	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	3.6	3.9	3.5	3.6	3.5	3.7	3.3	4.4	3.6	3.2	2	1.3	1.7	1.9	2.1	1.7	1.6	2.1
pH-Lab	pH unit	6.5-8.5	7.54	7.55	7.63	7.51	7.52	7.46	7.64	7.46	7.65	7.77	7.82	7.78	7.98	7.94	7.97	7.69	7.95	7.91
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.02	0.025	0.011	< 0.001	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	11.3	11.3	11.2	11.6	10.8	11.7	11.7	11.6	12	6.4	7	6.5	5.5	6.8	6.9	7.9	8	8
Sodium	mg/L	200	153	159	161	160	151	184	182	176	164	132	119	111	97.8	120	126	126	123	135
Sulphate	mg/L	500	< 10	2	< 1	2	< 5	< 10	1	<2	2	14	1	4	< 1	< 1	3	3	< 1	< 1
TDS	mg/L	500	**1252**	**1274**	**1269**	**1341**	**1243**	**1402**	**1342**	**1430**	**1410**	**1060**	**707**	**653**	**614**	**702**	**734**	**721**	**668**	**733**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.09	0.09	0.09	0.08	0.09	**0.11**	0.05	0.06	0.06	0.06	0.03	0.02	0.02	0.02	0.02	0.06	0.05	0.05
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0002	0.0002	0.0002	< 0.0001	0.0001	0.0002	<0.0001	0.0001	< 0.0001	0.0001	< 0.0001	0.0003	< 0.0001	0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	< 0.0003	< 0.0003	< 0.0005	< 0.0003	< 0.0003	< 0.0003	< 0.0003	<0.0003	<0.0001	0.0002	< 0.0001	0.0026	0.0012	0.0006	0.0009	0.0014	0.0004	0.0004
Barium	mg/L	1	0.936	0.992	0.92	**1.03**	0.979	0.846	0.883	0.868	**1.08**	0.96	**3.99**	**3.59**	**3.26**	**4.25**	**3.9**	**4.6**	**3.81**	**4.49**
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.552	0.55	0.545	0.566	0.539	0.547	0.578	0.601	0.576	0.258	0.492	0.494	0.405	0.53	0.525	0.581	0.513	0.527
Cadmium	mg/L	0.005	< 0.000029	< 0.000029	< 0.000059	< 0.000029	< 0.000029	< 0.000029	< 0.000029	<0.000030	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	0.00002	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	<0.001	<0.001	<0.001	0.0081	0.0075	< 0.0002	0.0024	0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	0.0003	0.0003	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005
Copper	mg/L	1	< 0.0002	0.0028	0.0011	< 0.0002	0.0002	0.0005	0.0003	<0.0002	<0.0001	0.0003	0.0002	0.0013	0.0001	0.0007	0.0006	0.0006	0.0008	0.0002
Lead	mg/L	0.01	0.00004	< 0.00009	< 0.0002	< 0.00009	< 0.00009	< 0.00009	< 0.00009	<0.00009	<0.00002	<0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	<0.00002	<0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0002	< 0.0002	< 0.0004	0.0003	< 0.0002	< 0.0002	0.0006	<0.0002	<0.0001	<0.0001	0.0003	0.001	0.0007	0.0004	0.0002	0.0004	0.0004	0.0004
Nickel	mg/L	N/A	< 0.01	0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	0.007	0.0071	0.0124	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	0.003	0.004	0.005	0.006	<0.02	<0.02	< 0.001	0.005	0.007	0.003	< 0.001	0.004	0.003	0.006	< 0.001	< 0.001	< 0.001	0.003
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001
Strontium	mg/L	N/A	11	11.1	11.2	11.7	10.9	11.7	9.81	10.2	11.5	1.94	6.37	5.64	5.14	5.7	6.07	5.8	5.58	6.2
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0003	< 0.0004	< 0.0007	< 0.0004	< 0.0004	< 0.0004	0.0004	<0.0004	0.0002	0.0003	0.0041	0.0026	0.0009	0.0009	0.0027	0.0009	< 0.0001	0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	0.009	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	21-91-II 9-May-19	21-91-II 8-Oct-19	21-91-II 5-May-20	21-91-II 13-Oct-20	21-91-II 4-May-21	21-91-II 13-Oct-21	21-91-II 3-May-22	21-91-II 25-Oct-22	21-91-II 2-May-23	21-91-II 18-Oct-23	21-91-II 6-May-24	21-91-II 16-Oct-24	21-91-III 26-May-15	21-91-III 13-Oct-15	21-91-III 17-May-16	21-91-III 12-Oct-16	21-91-III 23-May-17	21-91-III 17-Oct-17
Alkalinity	mg/L	500	390	382	378	380	426	425	393	413	425	455	434	411	**558**	**565**	**572**	**542**	**565**	**570**
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	1.57	1.53	1.2	1.26	1.67	1.43	1.49	1.33	2.15	1.96	1.83	1.86	1.54	1.75	1.7	1.73	1.54	1.28
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	81.9	78.7	69.6	72.6	69.8	70.7	75.5	71.1	70.4	83.4	83.6	83.1	201	215	187	212	210	218
COD	mg/L	N/A	33	32	36	26	36	37	32	19	33	51	61	37	83	102	98	73	92	90
Chloride	mg/L	250	232	210	174	187	207	210	209	250	250	224	244	221	**360**	**376**	**379**	**336**	**313**	**264**
Conductivity	umhos/cm	N/A	1410	1330	1260	1310	1390	1360	1410	1390	1500	1520	1570	1460	2130	2150	2210	2070	2120	2050
Cyanide	mg/L	0.2																		
DOC	mg/L	5	**7.3**	**5.9**	3.6	3.8	4.3	3.3	4.2	1.8	2.2	**6.6**	**9.5**	**8.1**	**6.7**	**7.3**	**9.7**	**8.6**	**14**	**13.5**
Fluoride	mg/L	1.5	**2.2**	1.1	0.8	1.2	< 0.1	1.2	1.4	1.3	**1.6**	<0.7	<0.1	1.3	0.2	0.2	0.2	0.2	< 0.1	< 0.1
Hardness	mg/L	500	446	429	386	399	396	390	410	409	396	454	470	455	**749**	**805**	**703**	**790**	**786**	**819**
Ion Balance	%	N/A			1.97	2.78	1.57	0.864	1.02	3.73	6.48	1	3.16	2.42						
Iron	mg/L	0.3	**1.26**	**1.23**	0.092	**2.32**	**0.717**	**2.31**	**0.327**	**2.71**	**0.302**	**2.46**	**2.09**	**2.46**	**7.55**	**12.7**	**9.86**	**5.34**	**5.96**	0.011
Magnesium	mg/L	N/A	58.7	56.6	51.5	52.8	53.8	51.8	53.9	56.3	53.5	59.8	63.6	60.1	60.3	65	57.1	63	63.7	66.7
Manganese	mg/L	0.05	0.007	0.009	0.009	0.009	0.008	0.009	0.009	0.008	0.007	0.008	0.009	0.009	0.041	0.046	0.038	0.035	0.032	0.032
Nitrate	mg/L	10	0.18	< 0.05	0.09	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.40	<0.05	<0.05	0.1	< 0.1	< 0.1	< 0.1	< 0.05	0.9
Nitrite	mg/L	1	< 0.05	< 0.05	0.07	< 0.05	< 0.05	0.19	< 0.05	< 0.05	< 0.05	<0.40	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	2.2	2.1	1.7	1.9	2.5	2.5	2.2	2.3	2.4	3.3	2.8	2.6	3.2	3.8	3.6	3.1	2.7	2.9
pH-Lab	pH unit	6.5-8.5	7.93	7.89	7.95	7.93	8.04	7.81	7.97	7.73	7.87	7.7	7.89	7.92	7.35	7.19	7.38	7.5	7.57	7.38
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	0.001	<0.001	< 0.001	< 0.001	< 0.001	0.004	0.024	0.013
Phosphorus	mg/L	N/A	0.05	0.04	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	8.3	8.1	7.2	7.3	7.4	7.4	7.2	7.7	7.6	8.4	8.8	7.9	5.9	6.4	5.5	6.1	6.2	7.1
Sodium	mg/L	200	141	131	116	124	131	139	129	130	129	141	154	132	132	146	128	138	143	145
Sulphate	mg/L	500	1	< 1	< 1	< 1	2	< 1	< 1	< 1	< 1	<2	<1	2	< 1	2	< 1	< 1	< 1	< 1
TDS	mg/L	500	**763**	**718**	**648**	**675**	**730**	**739**	**714**	**769**	**767**	**828**	**857**	**795**	**1100**	**1160**	**1110**	**1090**	**1080**	**1045**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.05	0.06	0.05	0.05	0.05	0.04	0.05	0.04	0.02	0.03	0.04	0.02	0.05	0.05	0.05	0.05	0.06	0.08
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0003	0.0005	0.0004	0.0008	0.0006	0.001	0.0005	0.0014	0.0004	0.0004	0.0004	0.0006	< 0.0001	0.002	0.0014	0.0001	0.0007	0.0015
Barium	mg/L	1	**4.85**	**4.59**	**3.89**	**4.18**	**4.04**	**4.26**	**4.18**	**4.36**	**3.96**	**4.75**	**5.44**	**4.2**	0.987	**1.17**	0.993	**1.05**	**1.06**	**1.11**
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.552	0.572	0.526	0.54	0.52	0.536	0.516	0.549	0.512	0.566	0.554	0.544	0.24	0.285	0.228	0.245	0.269	0.276
Cadmium	mg/L	0.005	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014
Chromium	mg/L	0.05	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	<0.001	<0.001	<0.001	0.0109	0.0133	< 0.0002	0.0035	0.001	< 0.001
Cobalt	mg/L	N/A	0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	0.0002	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0012	0.0004	< 0.0001	0.001	0.0013	0.0001	0.0007	0.0015	0.0001	0.0002	0.0008	0.0002	0.0002	0.0007	0.0002	0.0006	0.0007	0.0006
Lead	mg/L	0.01	0.00003	< 0.00009	< 0.00002	0.00005	0.00117	< 0.00004	< 0.00004	0.00005	< 0.00004	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0005	0.0003	0.0003	< 0.0002	0.0003	0.0005	0.0004	0.0002	<0.0001	<0.0001	0.0002	< 0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0044	0.0047	0.0032	< 0.01	0.01	0.01	< 0.01	0.02	0.01
Selenium	mg/L	0.01	0.003	0.003	0.002	0.002	0.003	0.003	0.004	0.004	0.003	0.003	0.003	0.003	< 0.001	0.005	0.004	0.007	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	6.86	6.31	5.64	5.9	6.07	5.93	5.93	6.26	5.98	6.71	7.23	6.29	2.24	2.18	2.13	2.08	2.55	2.62
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0002	< 0.0004	< 0.0001	< 0.0001	< 0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	0.0002	<0.0001	0.0064	0.0051	0.0017	0.0013	0.004	0.0013
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	21-91-III 8-May-18	21-91-III 11-Oct-18	21-91-III 9-May-19	21-91-III 8-Oct-19	21-91-III 5-May-20	21-91-III 13-Oct-20	21-91-III 4-May-21	21-91-III 13-Oct-21	21-91-III 3-May-22	21-91-III 25-Oct-22	21-91-III 2-May-23	21-91-III 18-Oct-23	21-91-III 16-Oct-24	21-91-III (Dup) 16-Oct-24	23-07 26-May-15	23-07 13-Oct-15	23-07 24-May-16	23-07 13-Oct-16
Alkalinity	mg/L	500	**544**	**557**	**515**	**522**	**553**	**516**	**547**	**576**	**540**	**532**	**519**	**528**	**514**	**504**	193	194	193	205
Unionized Ammonia	mg/L	N/A																		< 0.01
Ammonia	mg/L	N/A	1.18	1.12	1.06	1.31	1.05	1.2	1.2	1.26	1.6	1.48	1.62	1.65	2.64	2.56	0.06	0.05	0.05	0.09
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	217	221	219	224	214	215	208	219	163	199	186	197	181	183	76.4	79.9	77.8	85.9
COD	mg/L	N/A	93	114	101	96	99	90	103	116	128	94	91	111	79	69	12	16	26	< 5
Chloride	mg/L	250	**459**	**407**	**381**	**421**	**391**	**414**	**373**	**443**	**371**	**470**	**402**	**377**	**474**	**524**	7.7	8.4	8.4	9.4
Conductivity	umhos/cm	N/A	2110	2200	2140	2130	2150	2150	2160	2140	2130	2140	2100	2150	2490	2640	443	446	445	488
Cyanide	mg/L	0.2																		
DOC	mg/L	5	**16.4**	**12.5**	**13.3**	**11.5**	**10.9**	**8.8**	**9.7**	**8.3**	8	**5.5**	**6.7**	**11**	**11.3**	**12.1**	1.5	0.8	1	1.2
Fluoride	mg/L	1.5	< 0.1	< 0.1	0.3	< 1	< 0.1	< 0.1	0.1	< 0.1	< 0.5	< 1	< 0.1	<0.7	<0.7	<0.7	0.1	0.2	0.2	0.1
Hardness	mg/L	500	**820**	**825**	**804**	**835**	**801**	**797**	**765**	**790**	**605**	**744**	**700**	**725**	**928**	**939**	235	244	239	262
Ion Balance	%	N/A					2.67	2.71	3.15	0.434	5.59	2.06	0.753	2.6	4.61	2.32				
Iron	mg/L	0.3	**6.22**	**7.65**	**6.92**	**6.36**	**6.78**	**6.74**	**5.65**	**8.46**	**17**	**7.1**	0.088	**11.9**	**2.56**	**1.9**	0.051	0.122	0.023	**0.322**
Magnesium	mg/L	N/A	67.5	66.3	62.5	66.9	64.7	63.1	59.6	58.9	48.1	60	56.9	56.5	116	118	10.7	10.7	10.8	11.4
Manganese	mg/L	0.05	0.037	0.038	0.036	0.034	0.035	0.037	0.035	0.042	**0.103**	0.035	0.035	0.047	0.016	0.014	**0.065**	0.017	0.014	0.019
Nitrate	mg/L	10	< 0.05	< 0.05	0.17	< 0.5	0.08	0.69	0.17	< 0.05	< 0.3	< 0.5	< 0.05	<0.40	<0.40	<0.40	0.1	0.1	< 0.1	< 0.1
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.5	0.09	0.09	< 0.05	0.28	< 0.3	< 0.5	< 0.05	<0.40	<0.40	<0.40	< 0.1	< 0.1	< 0.1	< 0.1
Tot Kjel N	mg/L	N/A	2.8	2.8	2.7	3	2.8	3.2	3.1	3.3	3.8	3.5	2.9	4.1	3.7	3.9	0.7	0.4	0.6	0.9
pH-Lab	pH unit	6.5-8.5	7.54	7.54	7.54	7.45	7.39	7.45	7.51	7.34	7.4	7.35	7.51	7.3	7.72	7.91	7.94	8.05	7.9	8
Phenols	mg/L	N/A	< 0.001	0.025	< 0.002	< 0.002	< 0.002	< 0.002	0.004	< 0.001	< 0.001	< 0.001	< 0.001	0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.003
Phosphorus	mg/L	N/A	< 0.1	< 0.1	0.04	0.04	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	7.9	6.8	6.5	7.6	6.8	6.8	6.2	6.6	6	7.1	6.9	6.6	11.7	11.8	1.4	1.8	1.6	1.7
Sodium	mg/L	200	159	154	149	157	154	157	162	180	132	170	166	161	162	159	4.2	4.4	4.3	5.7
Sulphate	mg/L	500	< 1	< 1	1	< 10	< 1	< 1	< 1	4	< 5	< 10	< 1	<2	14	15	26	28	28	31
TDS	mg/L	500	**1244**	**1199**	**1138**	**1197**	**1171**	**1173**	**1145**	**1267**	**1064**	**1234**	**1129**	**1190**	**1380**	**1470**	242	250	247	269
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.09	0.08	0.1	**0.12**	0.1	0.1	0.1	0.08	0.08	**0.12**	0.06	0.06	0.05	0.05	0.02	0.02	0.02	0.07
Antimony	mg/L	0.006	< 0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0002	0.0001	0.0001	< 0.0001	< 0.0001	0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003
Arsenic	mg/L	0.025	< 0.0005	< 0.0001	< 0.0001	< 0.0003	< 0.0003	< 0.0003	< 0.0005	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0.0002	<0.0001	<0.0001	0.0003	0.0004	0.0003	0.0009
Barium	mg/L	1	**1.15**	**1.06**	**1.04**	**1.26**	**1.05**	**1.12**	0.916	**1.02**	0.819	**1.08**	0.959	1	0.943	0.953	0.083	0.084	0.084	0.102
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.288	0.273	0.256	0.297	0.295	0.29	0.258	0.312	0.298	0.322	0.322	0.35	0.585	0.585	< 0.005	0.01	0.015	0.014
Cadmium	mg/L	0.005	0.000111	< 0.000015	< 0.000015	< 0.000029	< 0.000029	< 0.000029	< 0.000059	< 0.000029	< 0.000029	< 0.000029	< 0.000029	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0019	0.0021	< 0.0002	0.0011
Cobalt	mg/L	N/A	0.0001	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	0.0003	0.0002	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0009	0.0002	0.0012	0.0006	0.0003	< 0.0002	0.0008	< 0.0002	0.0004	0.0005	< 0.0002	0.0002	0.0002	<0.0001	< 0.0001	< 0.0001	0.0002	0.0002
Lead	mg/L	0.01	< 0.0002	< 0.00002	< 0.00002	< 0.00009	0.00006	< 0.00009	0.00039	< 0.00009	< 0.00009	< 0.00009	< 0.00009	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0004	< 0.0001	< 0.0001	< 0.0002	0.0001	< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0002	< 0.0002	<0.0001	<0.0001	<0.0001	0.0004	0.0015	0.0009	0.0013
Nickel	mg/L	N/A	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.02	0.01	0.019	0.0071	0.007	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.002	0.004	0.003	0.003	0.002	0.003	0.003	0.004	0.005	0.006	0.006	0.003	0.006	0.005	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	2.62	2.38	2.22	2.88	2.36	2.44	1.69	1.6	1.13	1.83	1.94	1.46	11	11.2	0.255	0.283	0.263	0.275
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0007	0.0003	0.0003	< 0.0004	0.0003	< 0.0004	< 0.0007	< 0.0004	< 0.0004	< 0.0004	< 0.0004	0.0004	0.0002	0.0002	0.0012	0.0009	0.001	0.0005
Zinc	mg/L	5	0.007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	23-07 24-May-17	23-07 16-Oct-17	23-07 7-May-18	23-07 9-Oct-18	23-07 8-May-19	23-07 8-Oct-19	23-07 5-May-20	23-07 13-Oct-20	23-07 4-May-21	23-07 13-Oct-21	23-07 3-May-22	23-07 25-Oct-22	23-07 2-May-23	23-07 18-Oct-23	23-07 6-May-24	23-07 (Dup) 6-May-24	23-07 16-Oct-24	24-91 26-May-15
Alkalinity	mg/L	500	210	203	216	184	197	234	194	226	241	275	268	280	256	269	249	240	232	357
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.19	0.05	0.04	0.07	0.05	0.05	0.04	0.08	0.07	0.09	0.68	0.05	1.13	0.76	<0.05	<0.05	0.52	0.03
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	83.2	82.1	84.4	77	88.8	99	85.6	91.7	95.1	110	112	107	97.1	99.8	95	98.5	100	130
COD	mg/L	N/A	31	9	< 5	15	20	12	22	34	23	15	16	17	< 5	21	36	58	46	< 5
Chloride	mg/L	250	8.3	8.5	11.1	9.1	9.6	12.1	9.5	15.1	16.1	26.1	27.2	37.8	23.6	19.9	17.6	16.6	14.7	5.2
Conductivity	umhos/cm	N/A	473	447	479	450	478	548	463	544	522	622	661	659	612	607	585	569	550	742
Cyanide	mg/L	0.2																		
DOC	mg/L	5	0.9	1.3	1.6	2	1.9	2.7	2.6	2.6	2.7	1.5	2.3	1.7	2.3	3.7	3.1	1.4	2.3	1.4
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	0.1
Hardness	mg/L	500	251	252	257	236	268	297	258	274	284	322	329	318	287	296	282	292	297	403
Ion Balance	%	N/A				3.9			6.33	2.18	0.447	0.0775	3.06	4.24	2.96	1.84	0.931	2.39	5.21	
Iron	mg/L	0.3	0.034	0.239	0.044	< 0.005	0.011	0.032	0.072	0.021	0.193	**0.551**	0.198	0.206	0.012	0.029	0.012	<0.005	0.146	**1.31**
Magnesium	mg/L	N/A	10.5	11.3	11.2	10.6	11.2	12	10.6	10.8	11.3	11.4	11.9	12.2	10.8	11.2	10.8	11	11.2	18.8
Manganese	mg/L	0.05	0.012	0.021	0.008	< 0.001	0.004	0.023	0.006	0.03	0.021	0.02	0.02	0.024	0.011	0.024	0.004	0.005	0.026	0.022
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.16	<0.05	<0.05	<0.05	< 0.1
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05	< 0.05	< 0.05	< 0.05	0.05	<0.05	<0.05	<0.05	< 0.1
Tot Kjel N	mg/L	N/A	0.5	0.2	0.2	0.7	0.3	0.3	0.5	0.2	0.4	0.4	0.8	0.4	1.1	1	0.2	<0.1	0.6	0.3
pH-Lab	pH unit	6.5-8.5	8.03	8.04	7.99	7.96	8.04	7.88	7.9	7.94	7.96	7.75	7.73	7.76	7.9	7.51	7.86	7.84	8.01	7.6
Phenols	mg/L	N/A	0.008	0.005	< 0.001	0.006	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	3.89	1.07	1.28	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1
Potassium	mg/L	N/A	1.3	1.7	1.8	1.9	1.5	1.8	1.6	1.5	1.4	1.5	1.4	1.5	1.6	1.7	1.6	1.6	1.8	1.4
Sodium	mg/L	200	4.8	4.4	6.5	5.1	5.2	8.1	4.4	7.7	6.1	8.7	11.2	11.3	8.3	9	7.5	7.6	6	7.6
Sulphate	mg/L	500	24	24	31	33	30	33	28	32	32	32	31	40	35	30	31	31	29	37
TDS	mg/L	500	259	254	276	247	265	306	256	294	307	355	357	378	330	315	303	295	285	416
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.02	0.04	0.05	0.05	0.05	0.06	0.06	0.05	0.06	0.04	0.06	0.07	0.03	0.03	0.04	0.03	0.08	0.04
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0003	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002
Barium	mg/L	1	0.075	0.092	0.078	0.075	0.078	0.087	0.07	0.082	0.076	0.1	0.091	0.091	0.082	0.086	0.102	0.105	0.087	0.067
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002
Boron	mg/L	5	0.01	0.017	0.013	0.009	0.011	0.014	0.014	0.014	0.01	0.011	0.008	< 0.005	0.01	0.011	0.01	0.011	0.013	< 0.005
Cadmium	mg/L	0.005	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	0.0043
Cobalt	mg/L	N/A	< 0.005	< 0.005	0.0002	< 0.005	0.007	< 0.005	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	0.0003	0.0002	0.0002	0.0004	< 0.005
Copper	mg/L	1	< 0.0001	0.0001	0.0005	0.0007	0.0005	0.0002	0.0007	0.0019	0.0007	0.0002	0.0002	0.0005	0.0005	0.0004	0.0002	0.0001	0.0005	< 0.0001
Lead	mg/L	0.01	< 0.00002	< 0.00002	< 0.00002	0.00064	< 0.00002	0.00002	0.00016	0.00005	0.00003	< 0.00002	< 0.00002	0.00007	< 0.00002	<0.00002	<0.00002	<0.00002	0.00015	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	<0.00002	<0.00002	<0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0009	0.001	0.0013	0.0012	0.001	0.0013	0.001	0.001	0.0006	0.0006	0.0006	0.0006	0.0007	0.0009	0.0008	0.0008	0.0012	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0008	0.0006	0.0006	0.0008	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002
Strontium	mg/L	N/A	0.243	0.233	0.26	0.248	0.259	0.284	0.257	0.26	0.264	0.288	0.28	0.288	0.26	0.264	0.27	0.274	0.272	0.289
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0014	0.0004	0.0001	0.0005	< 0.0001	< 0.0001	0.0002	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0026
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	24-91 13-Oct-15	24-91 24-May-16	24-91 13-Oct-16	24-91 24-May-17	24-91 16-Oct-17	24-91 7-May-18	24-91 9-Oct-18	24-91 8-May-19	24-91 8-Oct-19	25-91 26-May-15	25-91 13-Oct-15	25-91 11-May-16	25-91 24-May-17	25-91 17-Oct-17	25-91 7-May-18	25-91 11-Oct-18	25-91 8-May-19	25-91 8-Oct-19
Alkalinity	mg/L	500	355	351	350	356	358	354	355	336	350	372	373	309	335	370	329	319	340	342
Unionized Ammonia	mg/L	N/A			< 0.01															
Ammonia	mg/L	N/A	0.05	0.05	0.06	0.04	0.05	0.04	0.06	0.06	0.04	0.08	0.11	0.05	0.03	0.07	0.05	0.11	0.07	0.12
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	132	130	135	130	133	130	134	138	143	159	159	116	133	151	133	153	141	158
COD	mg/L	N/A	< 5	17	< 5	7	5	< 5	< 5	47	7	< 5	8	< 5	18	10	5	11	18	21
Chloride	mg/L	250	6.7	6.3	3.9	5.8	4.1	6.9	5.3	6.1	5	164	134	148	113	147	152	156	133	151
Conductivity	umhos/cm	N/A	735	721	712	719	708	702	647	726	733	1220	1130	1060	1070	1170	1060	1130	1030	1100
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.2	1	1	0.8	1.2	1.9	2.3	2.2	2.8	1.2	1	1.5	3.9	2.8	2.9	2.8	3.4	3.5
Fluoride	mg/L	1.5	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.2	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	409	403	418	400	416	405	414	428	443	438	443	325	367	420	369	424	389	438
Ion Balance	%	N/A																		
Iron	mg/L	0.3	**1.64**	**1.25**	**1.91**	**1.29**	**1.89**	**1.23**	< 0.005	**1.08**	**2.1**	**0.307**	**1.2**	0.232	0.112	0.262	0.078	**1.06**	0.109	**1.46**
Magnesium	mg/L	N/A	19.1	18.9	19.4	18.4	20.2	19.4	19.3	20.2	20.9	9.99	10.9	8.32	8.21	10.4	8.88	10.1	8.94	10.5
Manganese	mg/L	0.05	0.022	0.02	0.023	0.022	0.023	0.021	0.007	0.025	0.023	0.042	0.044	0.02	0.037	0.033	0.047	0.042	**0.06**	**0.064**
Nitrate	mg/L	10	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.4	0.3	0.1	< 0.1	0.2	0.1	0.3	0.2	0.3	0.5	0.6	0.4	0.5	0.6	0.5	0.4	0.4	0.8
pH-Lab	pH unit	6.5-8.5	7.86	7.53	7.85	7.91	7.84	7.8	7.92	7.88	7.81	7.56	7.79	7.79	7.99	7.76	7.86	7.78	7.91	7.82
Phenols	mg/L	N/A	< 0.001	< 0.001	0.003	0.003	0.003	< 0.001	0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	0.002	0.002	< 0.001	0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.66	0.67	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.13	0.59
Potassium	mg/L	N/A	1.5	1.5	1.3	1.3	1.5	1.7	1.7	1.6	1.6	1.1	1.3	1.1	2	2.2	2.1	1.8	2.1	2.3
Sodium	mg/L	200	8.1	7.6	7.9	6.6	6.3	6.9	7.1	6.6	7.2	76.4	69.5	62.6	95.6	90.7	97.3	82.5	80.1	88.4
Sulphate	mg/L	500	37	38	33	28	27	35	33	33	34	12	21	14	9	24	11	35	9	12
TDS	mg/L	500	420	414	413	404	409	414	413	408	424	**646**	**622**	**536**	**562**	**648**	**602**	**631**	**578**	**629**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.04	0.04	0.06	0.03	0.07	0.09	0.07	0.07	0.09	0.04	0.04	0.03	0.04	0.08	0.08	0.06	0.07	0.09
Antimony	mg/L	0.006	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	0.0002	< 0.0001	0.0001	0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0004	0.0006	0.0004	0.0007	0.0009	0.0003	0.0003	0.0003	0.0008
Barium	mg/L	1	0.072	0.074	0.075	0.076	0.089	0.083	0.086	0.083	0.092	0.099	0.116	0.074	0.095	0.137	0.091	0.117	0.081	0.116
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.007	0.012	0.011	0.009	0.014	0.011	0.008	0.012	0.012	0.017	0.038	< 0.005	0.023	0.038	0.026	0.031	0.02	0.034
Cadmium	mg/L	0.005	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	0.0047	< 0.0002	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.0049	0.0054	0.0003	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0004	0.011	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	< 0.005	0.011	< 0.005
Copper	mg/L	1	< 0.0001	0.0003	0.0002	0.0038	0.0001	0.0001	0.0022	0.0007	< 0.0001	0.0001	0.0004	0.0004	0.0019	0.0009	0.0008	0.0003	0.0005	0.0004
Lead	mg/L	0.01	< 0.00002	< 0.00002	< 0.00002	0.00034	0.00003	0.00008	0.0001	0.00008	0.00002	< 0.00002	< 0.00002	< 0.00002	0.00008	0.00003	0.00003	0.00003	0.00003	< 0.00004
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0004	0.0003	0.0004	0.0003	0.0004	0.0004	0.0003	0.0004	0.0003	0.0005	0.0009	0.0007	0.0006	0.0004	0.0005	0.0003	0.0006
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.294	0.287	0.281	0.282	0.257	0.28	0.282	0.298	0.307	0.447	0.447	0.3	0.359	0.371	0.366	0.392	0.364	0.423
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0018	0.0019	0.0007	< 0.0001	0.0008	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0028	0.0021	< 0.0001	< 0.0001	0.0008	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry
Summary - General Water Quality

Parameters	Units	ODWQS	25-91 5-May-20	25-91 13-Oct-20	25-91 4-May-21	25-91 13-Oct-21	25-91 3-May-22	25-91 25-Oct-22	25-91 2-May-23	25-91 18-Oct-23	25-91 6-May-24	25-91 16-Oct-24	25-96 26-May-15	25-96 13-Oct-15	25-96 11-May-16	25-96 13-Oct-16	25-96 24-May-17	25-96 16-Oct-17	25-96 7-May-18	25-96 11-Oct-18
Alkalinity	mg/L	500	277	278	325	315	324	330	320	372	352	439	448	451	450	441	464	463	443	463
Unionized Ammonia	mg/L	N/A														0.11				
Ammonia	mg/L	N/A	0.03	0.06	0.07	0.06	0.08	0.01	0.54	2.64	<0.05	0.47	2.85	2.66	3.07	3.11	0.03	3.01	2.9	2.84
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	119	144	130	129	143	141	126	151	137	167	23.8	25.3	20.1	24.3	24.7	26.2	25.8	26.9
COD	mg/L	N/A	12	11	22	15	11	5	8	14	15	23	6	8	< 5	< 5	9	7	< 5	10
Chloride	mg/L	250	131	163	168	138	174	243	159	176	148	156	160	166	164	163	142	150	164	173
Conductivity	umhos/cm	N/A	962	1110	1090	1020	1200	1230	1080	1280	1150	1350	1350	1370	1340	1370	1350	1340	1290	1360
Cyanide	mg/L	0.2																		
DOC	mg/L	5	3	1.7	2.6	2.5	2.2	< 0.2	1.4	3	3.3	3.9	0.5	< 0.2	0.4	0.6	0.7	0.7	1.4	1
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	**2.4**	**2.3**	**2.3**	**2.4**	**2.6**	**2.5**	**1.9**	**1.8**
Hardness	mg/L	500	329	399	361	356	394	395	349	418	381	466	147	157	133	152	153	165	163	158
Ion Balance	%	N/A	3.41	3.44	1.01	2.33	2.41	8.11	1.08	1.56	0.738	0.904								
Iron	mg/L	0.3	0.067	0.18	0.045	0.056	0.088	0.212	0.058	0.11	0.209	0.193	0.014	0.127	0.015	0.023	0.035	0.207	0.021	0.126
Magnesium	mg/L	N/A	7.58	9.4	8.64	8.2	8.84	10.3	8.29	9.86	9.22	11.6	21.4	22.9	20	22.1	22.1	24.2	23.9	22.1
Manganese	mg/L	0.05	0.031	0.011	0.016	0.011	0.019	0.024	0.015	0.014	0.019	0.027	0.002	0.002	0.002	0.004	0.002	0.004	0.002	0.004
Nitrate	mg/L	10	0.09	0.05	0.41	< 0.05	< 0.05	< 0.05	< 0.05	0.09	<0.05	<0.05	0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	0.07	< 0.05	< 0.05	0.13	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.6	0.4	0.6	0.6	0.4	0.4	0.6	2.7	0.2	0.7	2.9	3	3.2	3.6	3.2	3.2	3.1	3.1
pH-Lab	pH unit	6.5-8.5	7.83	7.88	8.03	7.78	7.77	7.74	7.88	7.56	7.66	7.79	8.13	8.28	8.08	8.36	8.22	8.14	8.11	8.1
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.003	< 0.001	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.8	2.5	2.7	2.8	2.9	2.7	2.9	2.7	2.4	3.1	10.2	10.6	9	10.1	10.4	11.5	13.5	11.1
Sodium	mg/L	200	81.2	80.8	92.8	91.9	96.3	90.8	89.2	93.6	90.2	101	**239**	**244**	195	**235**	**244**	**239**	**262**	**236**
Sulphate	mg/L	500	13	30	13	23	8	27	14	23	12	17	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
TDS	mg/L	500	**521**	**596**	**611**	**582**	**628**	**713**	**591**	**690**	**620**	**730**	**731**	**742**	**685**	**725**	**725**	**736**	**761**	**752**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.07	0.08	0.09	0.05	0.08	0.1	0.05	0.05	0.08	0.05	0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.03	0.01	0.02
Antimony	mg/L	0.006	0.0002	0.0004	0.0002	0.0003	< 0.0001	0.0001	0.0001	0.0003	<0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0004	0.0003	0.0003	0.0003	0.0003	0.0005	0.0003	0.0004	0.0004	0.0004	< 0.0001	0.0026	0.0002	0.0002	0.0008	0.0012	0.0001	0.0002
Barium	mg/L	1	0.079	0.109	0.089	0.092	0.089	0.113	0.088	0.103	0.105	0.112	0.207	0.245	0.175	0.218	0.207	0.259	0.241	0.247
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.016	0.019	0.016	0.022	0.012	< 0.005	0.015	0.021	0.015	0.027	1.29	1.34	1.09	1.31	1.36	1.48	1.45	1.29
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	<0.001	<0.001	0.005	0.0062	< 0.0002	0.0024	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	0.0002	0.0004	0.0004	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005
Copper	mg/L	1	0.0011	0.0017	0.0009	0.0021	0.0003	0.0003	0.0007	0.0006	0.0004	0.0004	0.0006	0.0013	0.001	0.0012	0.0027	0.001	0.0018	0.0003
Lead	mg/L	0.01	0.0001	0.0001	0.00011	0.00008	0.00012	0.00004	0.00011	0.00003	0.00021	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00009	< 0.00002	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0004	0.0012	0.0004	0.0008	0.0004	0.0008	0.0004	0.0006	0.0004	0.0005	0.0003	0.0004	0.001	0.0003	0.0005	0.0012	0.0005	0.001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0015	0.0007	0.0007	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	0.001	< 0.001	< 0.001	< 0.001	0.001	0.001	<0.001	<0.001	<0.001	< 0.001	0.007	0.006	0.009	< 0.001	< 0.001	< 0.001	0.004
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.314	0.387	0.371	0.359	0.381	0.432	0.355	0.407	0.398	0.461	3.2	3.34	2.52	2.98	3.24	3.01	3.43	3.15
Thallium	mg/L	N/A	< 0.00005	< 0.00005	0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0002	0.0004	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	0.0002	<0.0001	0.0028	0.0022	< 0.0001	0.0008	< 0.0001	0.0009	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	25-96 8-May-19	25-96 7-Oct-19	25-96 5-May-20	25-96 13-Oct-20	25-96 4-May-21	25-96 13-Oct-21	25-96 3-May-22	25-96 25-Oct-22	25-96 2-May-23	25-96 18-Oct-23	25-96 6-May-24	25-96 16-Oct-24	27-93 26-May-15	27-93 13-Oct-15	27-93 12-May-16	27-93 13-Oct-16	27-93 24-May-17	27-93 16-Oct-17
Alkalinity	mg/L	500	412	418	419	420	455	453	416	428	433	457	440	433	212	210	215	209	212	213
Unionized Ammonia	mg/L	N/A																< 0.01		
Ammonia	mg/L	N/A	2.97	2.91	2.92	3.07	2.95	3.08	3.11	3.14	3.03	3.63	3.03	3.51	0.09	0.1	0.11	0.18	0.09	0.11
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	26.1	28.6	25.4	26.6	24.1	26.4	25.3	25	24.5	25.6	25	26.6	69.9	69.5	58.9	70.9	68.4	71.4
COD	mg/L	N/A	11	< 5	21	7	12	8	14	< 5	9	23	39	14	< 5	5	< 5	< 5	< 5	< 5
Chloride	mg/L	250	171	181	167	169	176	177	175	238	195	172	177	194	5.1	5.5	4.9	< 0.5	5.9	5.1
Conductivity	umhos/cm	N/A	1340	1340	1330	1330	1350	1340	1380	1370	1380	1380	1400	1380	480	475	481	478	478	478
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.1	1.4	1.8	0.6	2	1.3	1.3	< 0.2	< 0.2	1.5	2.6	1.7	1.3	0.7	1	1	1	0.9
Fluoride	mg/L	1.5	2	**2.2**	1.5	**2.2**	< 0.1	**2.1**	**2.1**	**2.9**	**2.4**	**1.7**	2	**2.3**	0.2	0.2	0.2	0.2	< 0.1	< 0.1
Hardness	mg/L	500	163	175	158	162	154	161	155	161	155	158	157	165	254	253	224	258	252	264
Ion Balance	%	N/A			3.07	3.03	0.622	1.94	2.18	3.48	1.33	2.95	1.37	1.05						
Iron	mg/L	0.3	0.007	0.05	0.021	**0.455**	0.02	**0.418**	0.024	0.299	0.011	0.225	0.014	0.299	**0.351**	**0.484**	0.289	**1.02**	**0.346**	**0.509**
Magnesium	mg/L	N/A	23.8	25.2	23.1	23.3	22.8	23.2	22.4	23.9	22.8	22.9	23	24	19.4	19.2	18.8	19.7	19.8	20.8
Manganese	mg/L	0.05	0.003	0.002	0.002	0.004	0.001	0.009	0.004	0.004	0.003	0.004	0.004	0.003	0.009	0.011	0.008	0.022	0.009	0.012
Nitrate	mg/L	10	< 0.05	< 0.05	0.1	< 0.05	0.2	< 0.05	< 0.05	< 0.05	< 0.05	<0.40	<0.05	<0.05	0.1	< 0.1	0.1	< 0.1	< 0.05	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	0.08	< 0.05	< 0.05	0.19	< 0.05	< 0.05	< 0.05	<0.40	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	3.3	3.2	3.4	3.5	3.2	3.4	3.2	3.6	3.5	4.2	3.3	3.5	0.4	0.2	0.2	0.2	0.4	0.2
pH-Lab	pH unit	6.5-8.5	8.21	8.09	8.07	7.96	8.36	8.06	8.1	8.01	8.12	7.91	7.98	8.14	7.89	7.99	7.99	8.19	8.06	8.03
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	0.01	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002
Phosphorus	mg/L	N/A	0.04	0.03	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	11.9	12.7	11.7	11.5	11.4	11.9	11.2	12.1	11.8	11.8	12.2	11.9	1.9	1.8	1.7	1.8	1.8	2
Sodium	mg/L	200	**243**	**262**	**238**	**243**	**246**	**252**	**243**	**244**	**242**	**237**	**247**	**235**	5.5	5.2	5.9	6.1	5.6	5.2
Sulphate	mg/L	500	< 1	< 1	< 1	< 1	2	< 1	< 1	< 1	< 1	29	<1	<1	34	34	35	35	28	30
TDS	mg/L	500	**729**	**766**	**722**	**729**	**759**	**769**	**729**	**807**	**758**	**751**	**761**	**747**	264	263	255	260	260	263
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	< 0.01	<0.01	0.01	<0.01	0.02	0.02	0.01	0.02	0.02	0.05
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0001	< 0.0003	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001
Barium	mg/L	1	0.22	0.263	0.21	0.26	0.211	0.237	0.218	0.26	0.236	0.238	0.279	0.26	0.085	0.083	0.07	0.088	0.083	0.094
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	1.41	1.52	1.4	1.4	1.36	1.41	1.37	1.47	1.37	1.45	1.42	1.44	0.027	0.02	< 0.005	0.033	0.036	0.043
Cadmium	mg/L	0.005	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	0.000021	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014
Chromium	mg/L	0.05	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	<0.001	<0.001	<0.001	0.0027	0.002	< 0.0002	0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.011	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	<0.0001	<0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0005	0.0014	0.0004	0.0015	0.0007	0.0001	0.0002	0.0005	0.0004	0.0003	0.0003	0.0002	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0031	0.0002
Lead	mg/L	0.01	0.00002	< 0.00009	0.00002	0.00006	0.00004	< 0.00004	< 0.00004	0.00005	< 0.00004	<0.00004	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00021	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0003	0.0003	0.0002	0.0003	0.0003	0.0002	0.0002	0.0019	0.0006	0.0003	0.0002	0.0003	0.0002	0.0008	0.0003	0.0003	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0002	0.0004	0.0004	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	0.004	0.004	0.003	0.003	0.004	0.004	0.005	0.006	0.005	0.003	0.004	0.003	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	3.36	3.7	3.35	3.45	3.38	3.51	3.36	3.57	3.43	3.38	3.53	3.55	0.46	0.478	0.389	0.453	0.496	0.426
Thallium	mg/L	N/A	< 0.00005	0.00006	< 0.00005	0.00007	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.001	0.0012	< 0.0001	0.0004	< 0.0001	0.0004
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	27-93 7-May-18	27-93 9-Oct-18	27-93 8-May-19	27-93 7-Oct-19	27-93 5-May-20	27-93 13-Oct-20	27-93 4-May-21	27-93 13-Oct-21	27-93 3-May-22	27-93 25-Oct-22	27-93 2-May-23	27-93 18-Oct-23	27-93 6-May-24	27-93 (Dup) 6-May-24	27-93 16-Oct-24	28-93 26-May-15	28-93 13-Oct-15	28-93 11-May-16
Alkalinity	mg/L	500	213	197	199	197	200	201	222	225	218	216	217	227	219	215	212	260	286	287
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.11	0.12	0.13	0.11	0.11	0.13	0.12	0.14	1.46	0.1	1.96	0.37	0.14	0.09	0.59	1.03	3.31	3.42
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	66.4	67.6	69.6	74.6	69	69.1	67.8	76.4	74.4	70.3	67.9	67.9	66.3	68.4	71.9	26.6	56.5	64.1
COD	mg/L	N/A	< 5	15	5	< 5	13	10	< 5	5	< 5	< 5	< 5	5	<5	13	<5	< 5	< 5	< 5
Chloride	mg/L	250	6.3	5.8	5.4	2.4	6.1	5.5	6.8	8	8.9	15.1	9.5	8.5	7.8	7.8	8.4	198	**475**	**478**
Conductivity	umhos/cm	N/A	460	472	473	467	468	468	485	498	509	509	515	503	508	510	499	1210	2730	2070
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.2	1.4	1.7	2	1.9	2.2	2.2	1.4	1.6	1	2.1	2.7	2.8	2	2	0.4	< 0.2	< 0.2
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	0.1	<0.1	<0.1	<0.1	0.1	0.6	1.4	1.3
Hardness	mg/L	500	250	252	259	269	255	249	253	272	267	260	253	251	250	255	268	137	346	405
Ion Balance	%	N/A					5.39	3.41	0.0218	1.94	2.29	2.24	1.03	1.9	0.214	1.5	4.19			
Iron	mg/L	0.3	0.269	**0.363**	0.285	**0.854**	**0.448**	**0.411**	**0.576**	**0.737**	**0.705**	**0.68**	**0.639**	**0.633**	**0.523**	**0.543**	**0.579**	**0.372**	**2.27**	**2.84**
Magnesium	mg/L	N/A	20.5	20.3	20.7	20.1	20	18.6	20.3	19.6	19.6	20.4	20.2	19.7	20.5	20.5	21.4	17.1	49.8	59.6
Manganese	mg/L	0.05	0.009	0.009	0.009	0.012	0.009	0.01	0.01	0.011	0.012	0.01	0.011	0.011	0.01	0.01	0.01	0.015	**0.084**	**0.075**
Nitrate	mg/L	10	< 0.05	0.11	< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	<0.05	<0.05	<0.05	0.2	0.2	< 0.1
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1
Tot Kjel N	mg/L	N/A	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	1.4	0.2	0.5	0.5	0.1	<0.1	0.4	1.4	3.9	3.7
pH-Lab	pH unit	6.5-8.5	8.05	8.26	8.06	7.96	7.91	7.93	8.14	7.99	7.82	7.85	7.96	7.45	7.76	7.94	8.04	8.07	7.71	7.91
Phenols	mg/L	N/A	< 0.001	< 0.002	< 0.002	< 0.002	0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	0.003	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.01	0.01	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.3	2	2.1	2.1	2	1.9	2	2.1	2	2.1	2.3	2.2	2.2	2.2	2.2	7	12.3	12.6
Sodium	mg/L	200	5.6	5.3	5.3	6.2	5	4.9	5.2	5.3	5	5.3	5.4	5.5	5.6	5.6	5.4	163	**252**	**259**
Sulphate	mg/L	500	34	35	34	35	32	36	36	38	37	49	43	36	36	36	35	2	4	2
TDS	mg/L	500	264	254	257	259	255	257	272	286	279	293	279	260	263	264	258	**573**	**1020**	**1060**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.03	0.05	0.04	0.02	0.02	0.03	0.03	0.02	< 0.01	0.02	0.02
Antimony	mg/L	0.006	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	0.0005
Barium	mg/L	1	0.086	0.081	0.082	0.091	0.081	0.083	0.08	0.094	0.088	0.095	0.092	0.087	0.104	0.106	0.09	0.236	0.661	0.809
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.042	0.036	0.041	0.037	0.039	0.034	0.04	0.036	0.04	0.022	0.041	0.042	0.042	0.04	0.039	0.26	0.857	0.792
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	0.0028	< 0.0002	< 0.0002
Cobalt	mg/L	N/A	< 0.0001	0.008	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	0.0001	0.0001	<0.0001	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0002	0.0003	0.0004	0.0001	0.0006	0.0015	0.0007	0.0003	0.0002	0.0003	0.0004	0.0002	0.0002	0.0002	0.0003	0.0003	0.0017	0.0011
Lead	mg/L	0.01	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	0.00003	< 0.00002	< 0.00002	0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0004	0.0003	0.0009
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.0002	<0.0002	<0.0002	0.0005	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	0.006	**0.02**
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.491	0.449	0.497	0.463	0.48	0.44	0.478	0.478	0.475	0.497	0.518	0.49	0.544	0.54	0.513	2.58	7.25	8.3
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0015	0.0007	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	28-93 18-Oct-16	28-93 24-May-17	28-93 16-Oct-17	28-93 7-May-18	28-93 11-Oct-18	28-93 8-May-19	28-93 7-Oct-19	28-93 5-May-20	28-93 13-Oct-20	28-93 4-May-21	28-93 13-Oct-21	28-93 3-May-22	28-93 25-Oct-22	28-93 2-May-23	28-93 18-Oct-23	28-93 6-May-24	28-93 16-Oct-24	29-93 26-May-15
Alkalinity	mg/L	500	261	290	294	266	288	296	303	270	277	289	279	284	270	304	305	293	276	349
Unionized Ammonia	mg/L	N/A		4.55	3.92															
Ammonia	mg/L	N/A	2.85			4.75	3.77	4.72	4.55	3.17	4.44	4.64	4.55	4.4	4.17	5.27	5.73	3.96	4.99	0.09
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	49.5	93	82.9	104	92.3	127	116	67.4	117	82.7	93.9	98.6	109	86.6	86.4	78.9	95.9	148
COD	mg/L	N/A	8	19	13	42	< 5	18	17	60	25	18	24	18	60	10	14	57	62	< 5
Chloride	mg/L	250	**537**	**634**	**732**	**1070**	**945**	**897**	**866**	**669**	**854**	**900**	**925**	**729**	**845**	**760**	**762**	**717**	**663**	147
Conductivity	umhos/cm	N/A	3340	2980	3480	3740	3350	3360	3000	2560	3070	3310	3230	3040	3250	2850	2910	2810	2890	1160
Cyanide	mg/L	0.2																		
DOC	mg/L	5	0.3	0.4	0.2	0.5	1.2	0.9	1.1	1.2	0.2	0.8	0.9	0.8	< 0.2	0.4	1.6	1.8	1.6	**11.1**
Fluoride	mg/L	1.5	1.5	< 1	**1.6**	1.2	< 1	< 1	< 1	< 1	< 1	0.6	**2.1**	< 1	< 1	**1.7**	<0.7	1.4	1.3	0.1
Hardness	mg/L	500	291	**562**	495	**630**	**542**	**774**	**686**	393	**697**	**510**	**563**	**585**	**569**	**534**	**529**	486	**575**	407
Ion Balance	%	N/A								9.06	2.6	9.49	6.46	3.21	0.189	2.67	3.46	2.49	2.76	
Iron	mg/L	0.3	**0.784**	**4.76**	**2.37**	**2.7**	**1.75**	**5.98**	**5.67**	**1.97**	**6.07**	**2.71**	**3.75**	**4.82**	< 0.005	**4.05**	**4.16**	**2.78**	**4.23**	0.061
Magnesium	mg/L	N/A	40.6	80.1	70	90.1	75.7	111	96.4	54.6	98.3	73.8	79.8	82.3	98.2	77.2	76.1	70.2	81.5	8.79
Manganese	mg/L	0.05	**0.055**	**0.107**	**0.087**	**0.099**	**0.099**	**0.141**	**0.113**	**0.062**	**0.111**	**0.072**	**0.078**	**0.085**	**0.098**	**0.079**	**0.072**	**0.057**	**0.105**	**0.236**
Nitrate	mg/L	10	0.1	< 0.5	< 0.05	< 0.5	< 0.5	< 0.5	< 0.5	1.09	0.97	< 0.05	< 0.5	< 0.5	< 0.5	< 0.05	<0.40	<0.40	<0.40	0.1
Nitrite	mg/L	1	< 0.1	< 0.5	< 0.05	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	**1.46**	< 0.5	< 0.5	< 0.05	<0.40	<0.40	<0.40	< 0.1
Tot Kjel N	mg/L	N/A	3.2	4.9	4.1	5.2	4.3	5.1	5.1	3.7	5.5	4.9	5.3	5.1	5.4	5.3	6.5	4.4	5.3	0.5
pH-Lab	pH unit	6.5-8.5	7.86	8.02	7.91	7.79	7.85	7.92	7.91	7.81	7.85	8.19	7.79	7.82	7.71	7.94	7.63	7.93	7.98	7.78
Phenols	mg/L	N/A	< 0.001	0.003	0.004	< 0.001	0.003	< 0.002	< 0.002	< 0.002	< 0.002	0.019	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.02	0.01	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.1
Potassium	mg/L	N/A	11	16	15.3	19.5	16.6	19.3	19.3	12.8	17.8	16.3	18.1	16.5	16.6	17.6	17.9	17	16.6	1.5
Sodium	mg/L	200	**252**	**365**	**302**	**370**	**346**	**384**	**395**	**271**	**381**	**338**	**363**	**352**	**347**	**341**	**327**	**329**	**311**	91.9
Sulphate	mg/L	500	3	< 10	1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 10	< 10	< 10	< 1	<2	<2	14	46
TDS	mg/L	500	**1060**	**1370**	**1389**	**1825**	**1655**	**1729**	**1686**	**1243**	**1640**	**1594**	**1659**	**1460**	**1583**	**1471**	**1620**	**1570**	**1610**	**654**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.02	0.03	0.05	0.06	0.04	0.07	0.07	0.04	0.07	0.05	0.04	0.06	0.08	0.03	0.03	0.03	0.02	0.04
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0003	0.0003	0.0002	0.0002	< 0.0001	0.0002	<0.0001	<0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0006	0.004	0.0043	0.0007	0.0003	0.0013	0.0009	0.0006	0.0025	0.0006	0.0006	0.0009	0.0007	0.001	0.0006	0.0019	0.0012	0.0004
Barium	mg/L	1	0.541	**1.25**	**1.2**	**1.55**	**1.28**	**1.99**	**1.71**	0.908	**1.88**	**1.15**	**1.31**	**1.44**	**1.67**	**1.33**	**1.25**	**1.36**	**1.53**	0.072
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002
Boron	mg/L	5	0.671	1.07	0.983	1.01	1.02	1.1	1.15	0.636	1.03	0.966	1.12	0.998	1.03	1.09	1.23	1.06	1.02	0.033
Cadmium	mg/L	0.005	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000029	< 0.000029	< 0.000029	< 0.000059	< 0.000029	< 0.000029	< 0.000029	< 0.000029	<0.000030	<0.000015	<0.000015	< 0.00002
Chromium	mg/L	0.05	< 0.0002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0039
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	0.0002	0.0002	< 0.005
Copper	mg/L	1	0.0012	0.0031	0.0012	0.0023	0.0004	0.0004	0.0022	0.0001	0.0022	0.0006	0.0002	0.0002	0.0008	0.0006	0.0002	0.0002	0.0003	0.0001
Lead	mg/L	0.01	< 0.00002	0.00003	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00009	0.00004	0.00012	< 0.0002	< 0.00009	< 0.00009	< 0.00009	< 0.00009	<0.00009	0.00002	<0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	<0.00002	<0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0004	0.0004	0.0005	0.0006	0.0004	0.0004	0.0004	0.0006	0.0009	0.0007	0.0005	0.0006	0.0006	0.0005	0.0004	0.0005	0.0005	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.0002	<0.0002	0.0003	< 0.01
Selenium	mg/L	0.01	**0.014**	< 0.001	0.003	0.001	**0.018**	**0.025**	**0.025**	0.007	**0.042**	<0.02	<0.02	<0.02	<0.03	< 0.001	<0.001	**0.015**	**0.016**	< 0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	0.00002	0.0002	< 0.0001	< 0.0001	0.0007	< 0.0001	< 0.0001	< 0.0002	0.0005	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002
Strontium	mg/L	N/A	6.1	13	9.33	13.7	11.3	17.6	15.3	8.7	16.2	11.9	13	13.4	15.9	12.6	12.4	11.7	13.2	0.461
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00022	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0007	< 0.0001	0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0004	< 0.0004	< 0.0004	< 0.0007	< 0.0004	< 0.0004	< 0.0004	< 0.0004	<0.0004	<0.0001	<0.0001	0.0024
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry
Summary - General Water Quality

Parameters	Units	ODWQS	29-93 13-Oct-15	29-93 24-May-16	29-93 18-Oct-16	29-93 24-May-17	29-93 17-Oct-17	29-93 7-May-18	29-93 9-Oct-18	29-93 9-May-19	29-93 7-Oct-19	29-93 5-May-20	29-93 13-Oct-20	29-93 4-May-21	29-93 13-Oct-21	29-93 3-May-22	29-93 25-Oct-22	29-93 2-May-23	29-93 18-Oct-23	29-93 6-May-24
Alkalinity	mg/L	500	399	349	360	343	312	376	316	351	408	347	354	361	396	420	377	351	366	367
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.12	0.06	0.05	0.18	0.07	0.08	0.08	0.11	0.09	0.04	0.11	0.09	0.11	0.09	0.09	0.93	0.76	0.05
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	158	113	126	193	165	181	204	185	186	150	176	125	134	144	147	137	133	140
COD	mg/L	N/A	27	15	24	47	19	7	5	55	18	21	49	27	33	15	19	14	19	35
Chloride	mg/L	250	129	83.4	101	**305**	215	**331**	**360**	**307**	**316**	**321**	**347**	169	184	145	**276**	230	192	239
Conductivity	umhos/cm	N/A	1240	971	1090	1900	1350	1630	1910	1760	1760	1750	1830	1270	1290	1350	1510	1430	1360	1510
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.1	2	2.1	1.2	1.5	1.9	2.2	2.6	2.3	2.5	1.5	2.5	2.2	2.4	0.2	1.7	3	3.8
Fluoride	mg/L	1.5	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1
Hardness	mg/L	500	433	311	346	**527**	452	498	**559**	**505**	**508**	412	480	344	366	393	405	376	364	383
Ion Balance	%	N/A										5.6	0.998	0.28	0.298	2.13	4.39	3.07	1.62	2.02
Iron	mg/L	0.3	**1.15**	0.15	0.173	0.206	**0.409**	**0.381**	**1.63**	0.173	**1.39**	0.165	**0.583**	0.172	**0.999**	**0.371**	**0.461**	**0.385**	**0.532**	0.144
Magnesium	mg/L	N/A	9.03	6.6	7.49	10.9	9.72	11.1	11.9	10.4	10.4	9.05	9.79	7.76	7.48	8.11	9.02	8.16	7.77	8.35
Manganese	mg/L	0.05	**0.364**	**0.269**	**0.235**	**0.572**	**0.193**	**0.377**	**0.416**	**0.364**	**0.331**	**0.189**	**0.388**	**0.214**	**0.49**	**0.297**	**0.217**	**0.258**	**0.156**	**0.28**
Nitrate	mg/L	10	0.3	< 0.1	0.2	< 0.05	< 0.05	< 0.05	0.07	0.22	< 0.05	1.13	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.11	<0.05
Nitrite	mg/L	1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.05	< 0.5	0.11	< 0.05	0.2	< 0.05	< 0.05	< 0.05	<0.05	<0.05
Tot Kjel N	mg/L	N/A	0.9	0.4	0.6	0.6	0.7	0.6	0.5	0.8	0.7	0.4	0.6	0.8	1	0.5	0.5	0.9	1.2	0.2
pH-Lab	pH unit	6.5-8.5	7.84	7.68	7.98	7.96	7.99	7.95	8.02	7.89	7.9	7.64	7.87	8.15	7.76	7.73	7.76	7.87	7.66	7.78
Phenols	mg/L	N/A	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	0.009	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	0.001	<0.001	<0.001
Phosphorus	mg/L	N/A	0.2	0.2	0.1	0.1	0.2	0.2	0.2	5.42	0.2	0.1	< 0.1	0.1	0.2	0.1	< 0.1	0.1	0.2	<0.1
Potassium	mg/L	N/A	1.9	1.4	1.6	1.7	2	2	2.2	1.9	2.3	1.7	2.1	1.5	2.3	1.5	2	1.8	2	1.8
Sodium	mg/L	200	100	97.3	92	134	112	153	**206**	163	**215**	170	**215**	142	158	146	163	148	138	154
Sulphate	mg/L	500	60	45	59	58	42	67	74	79	40	71	87	58	62	59	64	69	54	47
TDS	mg/L	500	**701**	**557**	**604**	**914**	**733**	**971**	**1050**	**957**	**1016**	**931**	**1050**	**720**	**787**	**755**	**888**	**805**	**741**	**824**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.04	0.03	0.05	0.07	0.09	0.09	0.09	0.09	0.1	0.08	0.09	0.07	0.07	0.08	0.09	0.04	0.04	0.05
Antimony	mg/L	0.006	< 0.0001	< 0.0001	0.0002	0.0001	< 0.0001	< 0.0002	0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	<0.0001
Arsenic	mg/L	0.025	0.001	0.0005	0.0006	0.0005	0.001	< 0.0005	0.0007	0.0004	0.0006	0.0003	0.0005	0.0004	0.0008	0.0005	0.0007	0.0003	0.0005	0.0003
Barium	mg/L	1	0.098	0.059	0.075	0.103	0.105	0.102	0.141	0.105	0.133	0.087	0.126	0.071	0.1	0.085	0.112	0.088	0.09	0.1
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001
Boron	mg/L	5	0.069	0.047	0.065	0.052	0.062	0.044	0.073	0.036	0.072	0.048	0.07	0.038	0.062	0.042	0.05	0.038	0.055	0.04
Cadmium	mg/L	0.005	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000059	< 0.000015	0.000016	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	<0.000015
Chromium	mg/L	0.05	0.0054	< 0.0002	< 0.0002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.001	< 0.005	< 0.005	< 0.005	0.0004	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0006	0.0008
Copper	mg/L	1	0.0007	0.0013	0.0011	0.0022	0.0006	0.0012	0.0008	0.0016	0.0012	0.001	0.0021	0.0013	0.0005	0.0004	0.0006	0.0007	0.0003	0.0003
Lead	mg/L	0.01	< 0.00002	< 0.00002	< 0.00002	0.0002	0.00002	< 0.0002	0.00006	0.00005	< 0.00009	0.00002	0.00008	0.00007	< 0.00004	< 0.00004	< 0.00004	0.00005	<0.00004	<0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	<0.00002
Molybdenum	mg/L	N/A	0.0005	0.0005	0.0005	0.0004	0.0003	< 0.0004	0.0004	0.0062	0.0005	0.0003	0.0004	0.0003	0.0004	0.0006	0.0004	0.0003	0.0003	0.0003
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0006	0.001
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.004	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	<0.001	<0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.0004	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001
Strontium	mg/L	N/A	0.453	0.355	0.38	0.638	0.458	0.587	0.586	0.617	0.574	0.54	0.578	0.459	0.45	0.485	0.519	0.506	0.456	0.538
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005
Vanadium	mg/L	N/A	0.0021	0.0017	0.0009	< 0.0001	0.0005	< 0.0007	< 0.0001	< 0.0001	< 0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	<0.0001	<0.0001
Zinc	mg/L	5	< 0.005	< 0.005	0.026	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	29-93 16-Oct-24	30-93 26-May-15	30-93 13-Oct-15	30-93 25-May-16	30-93 12-Oct-16	30-93 24-May-17	30-93 18-Oct-17	30-93 7-May-18	30-93 9-Oct-18	30-93 9-May-19	30-93 7-Oct-19	30-93 5-May-20	30-93 13-Oct-20	30-93 4-May-21	30-93 13-Oct-21	30-93 3-May-22	30-93 25-Oct-22	30-93 2-May-23
Alkalinity	mg/L	500	341	**545**	**537**	**568**	**532**	**562**	**526**	**511**	460	468	452	467	465	**532**	**535**	467	478	465
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.36	5.86	7.69	8.72	11.5	9.8	9.04	8.58	7.25	7.28	6.85	6.95	7.98	9.84	10.3	8.89	9.06	8.19
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	154	159	133	156	153	156	156	149	150	148	153	144	139	140	150	141	133	136
COD	mg/L	N/A	266	21	13	27	11	38	24	13	12	25	34	23	17	28	20	28	27	15
Chloride	mg/L	250	240	151	158	165	153	132	139	153	155	173	162	154	156	166	171	177	240	202
Conductivity	umhos/cm	N/A	1460	1480	1470	1520	1490	1500	1430	1360	1380	1390	1360	1360	1370	1460	1450	1470	1470	1460
Cyanide	mg/L	0.2																		
DOC	mg/L	5	3.6	2	3.5	3.9	3.4	**5.2**	4.7	5	**5.5**	**5.7**	4.6	4.5	3.1	4.7	3.7	3.6	1.3	3.2
Fluoride	mg/L	1.5	<0.1	0.1	0.1	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	421	**552**	481	**541**	**539**	**540**	**549**	**526**	**520**	**514**	**535**	**505**	490	495	**521**	489	479	482
Ion Balance	%	N/A	0.509											5.56	3.15	1.36	3.44	3.93	2.33	0.801
Iron	mg/L	0.3	0.147	**9.66**	**10.6**	**11.3**	**12**	**11.1**	**10.3**	**9.65**	0.009	**8.19**	**9.72**	**8.58**	**8.14**	**9.35**	**8.77**	**9.61**	**8.73**	**8.73**
Magnesium	mg/L	N/A	8.6	37.7	36.1	36.8	37.8	36.3	38.8	37.3	35.2	35.1	37.1	35.2	34.6	35.3	35.5	33.2	35.7	34.7
Manganese	mg/L	0.05	**0.282**	**0.533**	**0.491**	**0.545**	**0.528**	**0.503**	**0.498**	**0.401**	**0.305**	**0.324**	**0.336**	**0.296**	**0.301**	**0.311**	**0.343**	**0.297**	**0.288**	**0.266**
Nitrate	mg/L	10	<0.05	0.2	0.2	0.1	0.1	0.23	0.16	< 0.05	0.17	0.24	0.94	0.09	< 0.05	< 0.05	0.15	0.58	0.07	0.09
Nitrite	mg/L	1	<0.05	**1.2**	0.5	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	0.05	< 0.05	0.62	0.07	< 0.05	< 0.05	0.08	< 0.05	< 0.05	0.05
Tot Kjel N	mg/L	N/A	1.1	7.1	8.9	12.4	11.5	10.8	10.8	9.7	8.3	8.1	8.6	8	9.2	11.4	11.5	11.9	10.3	7.4
pH-Lab	pH unit	6.5-8.5	7.88	7.34	7.36	7.23	7.64	7.77	7.59	7.75	8.06	7.67	7.63	7.54	7.59	7.88	7.5	7.58	7.35	7.7
Phenols	mg/L	N/A	<0.001	< 0.001	< 0.001	< 0.001	0.003	0.002	0.003	< 0.001	0.008	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.22	0.98	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.2	3.3	3.3	3.7	3.5	3.6	4.3	4.2	3.6	3.5	3.6	3.4	3.5	3.7	4.2	3.6	3.9	3.6
Sodium	mg/L	200	139	112	93.3	112	109	109	107	111	108	105	105	99.9	102	108	116	108	114	109
Sulphate	mg/L	500	39	7	7	7	8	7	7	7	9	9	6	7	8	7	6	7	8	9
TDS	mg/L	500	**794**	**819**	**766**	**833**	**811**	**806**	**791**	**790**	**747**	**772**	**757**	**742**	**730**	**801**	**826**	**772**	**842**	**783**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.04	0.05	0.03	0.04	0.04	0.04	0.08	0.07	0.06	0.08	0.09	0.08	0.08	0.08	0.06	0.09	0.09	0.03
Antimony	mg/L	0.006	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0004	0.0102	0.0062	0.0106	0.01	0.0078	0.0067	0.0068	0.0061	0.0062	0.0054	0.0049	0.0046	0.0053	0.0045	0.0054	0.0057	0.0044
Barium	mg/L	1	0.102	0.427	0.389	0.483	0.43	0.451	0.527	0.455	0.381	0.416	0.467	0.427	0.416	0.426	0.492	0.418	0.455	0.417
Beryllium	mg/L	N/A	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.051	0.1	0.11	0.112	0.111	0.108	0.12	0.114	0.092	0.1	0.105	0.106	0.11	0.107	0.114	0.1	0.096	0.102
Cadmium	mg/L	0.005	<0.000015	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	0.000029	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012
Chromium	mg/L	0.05	<0.001	< 0.0002	< 0.0002	< 0.0002	0.0034	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.0009	0.005	0.006	0.006	0.008	< 0.005	< 0.005	0.0037	0.012	< 0.005	< 0.005	0.0029	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006
Copper	mg/L	1	0.0002	0.0004	0.0005	0.0013	0.0005	0.0034	0.0007	0.0005	0.0034	0.0009	0.0004	< 0.0001	0.0011	0.0005	0.0003	0.0002	0.0006	0.0003
Lead	mg/L	0.01	<0.00002	0.00016	< 0.00002	< 0.00002	< 0.00002	0.0002	0.00003	0.00004	0.00337	0.00003	< 0.00009	0.00005	0.00005	0.00004	0.00005	< 0.00004	< 0.00004	< 0.00004
Mercury	mg/L	0.001	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0004	0.0003	0.0004	0.0005	0.0004	0.0004	0.0004	0.0004	< 0.0001	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0005	0.0004	0.0005
Nickel	mg/L	N/A	0.0006	0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	<0.001	0.004	< 0.001	0.004	0.003	< 0.001	< 0.001	< 0.001	0.001	0.001	0.002	< 0.001	0.001	0.001	0.002	0.002	0.002	0.002
Silver	mg/L	N/A	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.506	0.581	0.532	0.593	0.546	0.573	0.511	0.558	0.527	0.561	0.556	0.529	0.529	0.537	0.575	0.518	0.557	0.528
Thallium	mg/L	N/A	<0.00005	0.00006	0.00007	0.00007	< 0.00005	0.00007	0.0001	0.00007	0.00016	< 0.00005	0.00008	0.00005	< 0.00005	< 0.00005	0.00006	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0001	0.0043	0.001	0.0035	0.0013	< 0.0001	0.0008	0.0001	0.0032	0.0001	< 0.0004	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001
Zinc	mg/L	5	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.012	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	30-93 18-Oct-23	30-93 6-May-24	30-93 16-Oct-24	31-93 26-May-15	31-93 13-Oct-15	31-93 25-May-16	31-93 12-Oct-16	31-93 24-May-17	31-93 18-Oct-17	31-93 7-May-18	31-93 9-Oct-18	31-93 9-May-19	31-93 7-Oct-19	31-93 5-May-20	31-93 13-Oct-20	31-93 4-May-21	31-93 13-Oct-21	31-93 3-May-22
Alkalinity	mg/L	500	459	450	445	**542**	**537**	**538**	**536**	**530**	**522**	**539**	426	489	453	452	462	490	**523**	473
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	6.27	6.67	6.89	3.93	4.59	4.96	8.1	5.71	7.16	6.53	6.43	5.65	6.32	5.51	6.88	6.56	7.97	7.61
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	110	131	130	166	144	160	164	168	163	152	150	150	154	135	146	146	150	149
COD	mg/L	N/A	23	24	26	26	54	29	11	24	44	19	17	25	17	35	21	25	23	25
Chloride	mg/L	250	181	178	182	151	157	160	153	129	139	145	154	166	162	150	155	165	169	175
Conductivity	umhos/cm	N/A	1410	1420	1390	1410	1470	1440	1480	1450	1410	1360	1320	1380	1360	1320	1370	1390	1430	1480
Cyanide	mg/L	0.2																		
DOC	mg/L	5	4.4	**5.9**	**5.4**	1.6	3.5	3.3	3.2	4.6	4.6	4.7	4.8	**5.2**	**5.1**	4	3	4.4	3.3	3.5
Fluoride	mg/L	1.5	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	414	470	466	**563**	**508**	**550**	**565**	**569**	**566**	**532**	**525**	**516**	**533**	469	**508**	**517**	**527**	**514**
Ion Balance	%	N/A	5.06	1	1.63											2.13	4.31	3.79	3.63	4.93
Iron	mg/L	0.3	3	**8.75**	**3.06**	**11.5**	**10.3**	**12.8**	**11.5**	**10.8**	**9.37**	**9.48**	**8.8**	**8.91**	**7.08**	**8.35**	**8.72**	**10.1**	**9.92**	**11.5**
Magnesium	mg/L	N/A	33.7	34.6	34.6	36.2	36.2	36.3	38	36.5	38.6	37	36.6	34.2	36.1	32.1	34.8	37	37	34.5
Manganese	mg/L	0.05	**0.144**	**0.24**	**0.144**	**0.587**	**0.536**	**0.574**	**0.578**	**0.511**	**0.573**	**0.436**	**0.468**	**0.409**	**0.382**	**0.393**	**0.404**	**0.418**	**0.417**	**0.425**
Nitrate	mg/L	10	<0.05	<0.05	<0.05	0.2	0.3	0.2	0.1	< 0.05	0.17	0.3	0.35	0.46	0.81	0.58	< 0.05	< 0.05	0.61	0.16
Nitrite	mg/L	1	0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	0.42	< 0.05	0.06	0.24	< 0.05	< 0.05	0.14	< 0.05	0.5	0.41	< 0.05
Tot Kjel N	mg/L	N/A	8.4	7.1	6.6	4.7	6.1	7.6	9.2	6.6	9.4	8.3	7.5	6.7	8.2	6.3	7.9	8.4	9.7	10.9
pH-Lab	pH unit	6.5-8.5	7.44	7.48	7.75	7.26	7.44	7.28	7.69	7.81	7.6	7.62	7.94	7.67	7.64	7.54	7.54	7.88	7.56	7.57
Phenols	mg/L	N/A	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.003	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001
Phosphorus	mg/L	N/A	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.29	1.19	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	3.6	3.5	3.5	3.3	3.7	3.4	3.9	3.5	4.5	4.4	4.1	3.7	4.4	3.3	4	3.7	4.6	3.8
Sodium	mg/L	200	106	106	98.9	102	89.7	101	105	100	103	106	101	96.2	101	86.6	98.8	100	111	104
Sulphate	mg/L	500	12	14	15	7	7	8	7	8	8	8	9	10	6	8	8	8	7	7
TDS	mg/L	500	**767**	**775**	**754**	**808**	**772**	**807**	**816**	**782**	**788**	**794**	**728**	**769**	**750**	**703**	**734**	**772**	**812**	**779**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.03	0.06	0.03	0.04	0.03	0.04	0.06	0.04	0.09	0.07	0.07	0.08	0.09	0.08	0.08	0.08	0.06	0.08
Antimony	mg/L	0.006	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0021	0.0049	0.002	0.0032	0.0026	0.0039	0.0047	0.0028	0.0031	0.0025	0.0031	0.0025	0.0022	0.0017	0.0024	0.0023	0.0027	0.0026
Barium	mg/L	1	0.334	0.481	0.374	0.469	0.447	0.488	0.499	0.46	0.543	0.473	0.457	0.437	0.463	0.403	0.453	0.427	0.5	0.468
Beryllium	mg/L	N/A	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.099	0.097	0.093	0.081	0.104	0.092	0.107	0.088	0.114	0.093	0.1	0.083	0.098	0.086	0.106	0.088	0.106	0.091
Cadmium	mg/L	0.005	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	<0.001	<0.001	<0.001	< 0.0002	< 0.0002	< 0.0002	0.0033	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.0017	0.0028	0.0015	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0019	< 0.005	< 0.005	< 0.005	0.0015	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0004	0.0002	0.0004	0.0004	0.0006	0.0014	0.0006	0.0037	0.0008	0.0006	0.0008	0.0009	0.0005	0.0001	0.0023	0.0004	0.0004	0.0002
Lead	mg/L	0.01	<0.00002	0.00003	<0.00002	0.00012	< 0.00002	< 0.00002	0.00003	0.00021	0.00003	0.00002	0.00003	0.00003	< 0.00009	< 0.00004	0.00009	0.00004	< 0.00004	< 0.00004
Mercury	mg/L	0.001	<0.00002	<0.00002	<0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0004	0.0004	0.0005	0.0001	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0003	0.0002	0.0002	0.0003	0.0019
Nickel	mg/L	N/A	0.0061	0.0059	0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	<0.001	0.001	<0.001	0.003	< 0.001	0.004	0.003	< 0.001	< 0.001	< 0.001	0.001	0.001	< 0.001	< 0.001	< 0.001	0.001	0.002	0.002
Silver	mg/L	N/A	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.494	0.555	0.518	0.561	0.538	0.573	0.551	0.568	0.509	0.555	0.519	0.534	0.536	0.477	0.526	0.543	0.589	0.531
Thallium	mg/L	N/A	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	<0.0001	<0.0001	<0.0001	0.0045	0.001	0.0026	0.0013	< 0.0001	0.0008	< 0.0001	< 0.0001	< 0.0001	< 0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	31-93 25-Oct-22	31-93 2-May-23	31-93 18-Oct-23	31-93 6-May-24	31-93 16-Oct-24	32-93-I 13-Jul-15	32-93-I 13-Oct-15	32-93-I 17-May-16	32-93-I 12-Oct-16	32-93-I 24-May-17	32-93-I 19-Jul-17	32-93-I 17-Oct-17	32-93-I 8-May-18	32-93-I 24-Jul-18	32-93-I 11-Oct-18	32-93-I 8-May-19	32-93-I 15-Jul-19	32-93-I 9-Oct-19
Alkalinity	mg/L	500	470	455	462	438	433	275	254	267	254	275	272	274	271	258	279	250	264	256
Unionized Ammonia	mg/L	N/A								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ammonia	mg/L	N/A	8.04	8.16	7.55	6.5	8.15	0.33	0.19	0.29	0.13	0.27	0.05	0.1	0.24	0.49	0.19	0.26	0.25	0.18
BOD	mg/L	N/A							4	4	< 3	< 3	< 3	< 3	< 3	< 2	4	< 3	< 3	< 3
Calcium	mg/L	N/A	122	135	115	132	141	118	109	113	112	111	112	122	120	107	111	114	117	111
COD	mg/L	N/A	16	15	26	37	62	176	297	421	< 5	5	8	9	22	66	< 5	310	69	61
Chloride	mg/L	250	232	199	182	177	187	82.4	82.8	83.1	81.8	69.2	75.6	78	96	94.3	91.1	97.1	96.8	106
Conductivity	umhos/cm	N/A	1460	1430	1420	1410	1400	855	817	851	829	859	867	870	834	865	883	861	865	864
Cyanide	mg/L	0.2						< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.011	< 0.005	< 0.005
DOC	mg/L	5	1	2	4.2	6	**5.7**	0.7	0.9	1.2	3.9	1.8	1.2	1.2	2	1.6	1.9	2.5	2.6	2
Fluoride	mg/L	1.5	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.1	0.2	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	456	472	422	468	**501**	436	429	424	416	401	410	447	448	408	416	428	430	426
Ion Balance	%	N/A	4.84	1.51	5.7	1.53	2.49													
Iron	mg/L	0.3	**1.91**	**10.6**	**2.57**	**10.4**	**10.2**	**0.435**	0.281	**0.322**	0.226	0.03	0.005	0.013	**0.428**	**0.336**	0.214	0.241	**0.389**	0.246
Magnesium	mg/L	N/A	36.7	32.9	32.7	33.5	36	34.1	38.4	34.7	33	30.1	31.2	34.6	36	34.1	33.6	34.7	33.4	36.2
Manganese	mg/L	0.05	**0.201**	**0.375**	**0.175**	**0.361**	**0.36**	0.013	0.008	0.012	0.014	0.025	0.017	0.019	0.015	0.013	0.0115	0.011	0.013	0.008
Nitrate	mg/L	10	1.01	0.18	0.11	0.21	0.29	< 0.1	< 0.1	< 0.1	0.1	< 0.05	0.11	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	< 0.05	0.09	0.66	<0.05	0.11	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	9.4	8.3	9.6	6.3	9.8	4.5	12.7	3.4	0.4	0.3	0.3	0.2	1.1	1.4	3.6	20.3	1.1	1.7
pH-Lab	pH unit	6.5-8.5	7.37	7.68	7.43	7.49	7.79	7.8	7.78	7.93	7.94	7.95	8.01	7.95	7.81	7.8	7.8	7.67	7.58	7.84
Phenols	mg/L	N/A	0.004	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.004	< 0.001	< 0.001	0.004	< 0.001	0.014	0.021	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	13.1	2.17	2.31
Potassium	mg/L	N/A	4.6	3.8	4.1	3.8	4.1	2.9	2.6	2.4	2.4	1.8	2.4	2.5	2.8	2.7	2.6	2.8	2.5	2.8
Sodium	mg/L	200	110	101	101	102	98.7	17.4	17.3	16.7	16	17.3	20.5	18.2	18.7	17.6	16.9	17.3	17.2	18.3
Sulphate	mg/L	500	8	11	12	12	15	51	54	59	52	42	44	43	52	49	51	51	49	49
TDS	mg/L	500	**808**	**766**	**770**	**764**	**759**	472	457	469	451	436	449	463	489	461	474	468	475	478
TSS	mg/L	N/A						16700	43500	7200	40000	54	70	74	9000	6000	34000	25200	15600	8400
Turbidity	NTU	N/A						11100	21500	5680	10900	26.8	25	43.1	3900	3420	14700	15600	6440	2420
Colour	TCU	5						2	< 2	3	7	< 2	< 2	2	< 2	< 2	< 2	< 2	< 2	< 2
Aluminum	mg/L	0.1	0.09	0.04	0.04	0.05	0.04	0.03	0.03	0.03	0.05	0.03	0.03	0.06	0.08	0.06	0.06	0.07	0.07	0.07
Antimony	mg/L	0.006	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	0.0002	0.0002	< 0.0001	0.0002	0.0001	0.0002	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0008	0.0023	0.001	0.0028	0.0039	0.0006	0.0004	< 0.0001	0.0003	0.0008	0.0007	0.0005	0.0001	< 0.0001	0.0002	0.0004	0.0001	0.0002
Barium	mg/L	1	0.424	0.44	0.365	0.498	0.437	0.146	0.15	0.143	0.14	0.065	0.073	0.088	0.153	0.141	0.159	0.137	0.139	0.152
Beryllium	mg/L	N/A	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.088	0.082	0.092	0.086	0.098	0.039	0.048	0.017	0.043	0.036	0.045	0.05	0.048	0.043	0.043	0.076	0.044	0.047
Cadmium	mg/L	0.005	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.000014	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.0002	0.0034	< 0.0002	0.0008	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	0.0008	0.0017	0.0015	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.01	< 0.0001	0.009	0.0002	< 0.005
Copper	mg/L	1	0.0005	0.0004	0.0005	<0.0001	0.0003	< 0.0001	0.0004	0.0001	< 0.0001	0.0009	0.0015	0.0004	0.0004	0.0004	0.0004	0.0009	0.0007	< 0.0001
Lead	mg/L	0.01	< 0.00004	< 0.00004	<0.00002	<0.00002	0.00003	0.00005	0.0001	0.0001	0.00009	0.00008	0.00011	< 0.00002	0.00003	0.00018	0.00012	0.00022	0.00008	0.00012
Mercury	mg/L	0.001	< 0.00002	< 0.00002	0.00002	<0.00002	<0.00002	< 0.00002	0.00005	0.00005	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0003	0.0003	0.0003	0.0004	< 0.0001	0.0002	0.0003	0.0001	0.0004	0.0005	0.0004	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	0.0047	0.0044	0.0043	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	0.002	0.002	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.552	0.51	0.478	0.523	0.525	0.904	0.862	0.799	0.805	0.641	0.804	0.669	0.884	0.809	0.822	0.803	0.819	0.855
Thallium	mg/L	N/A	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.003	0.0012	0.0006	0.0004	0.001	0.0013	0.0007	0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	<0.005	<0.005	<0.005	0.007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	32-93-I 5-May-20	32-93-I 13-Jul-20	32-93-I 13-Oct-20	32-93-I 4-May-21	32-93-I 13-Oct-21	32-93-I 3-May-22	32-93-I 25-Oct-22	32-92-II 2-May-23	32-93-I 2-May-23	32-92-II 12-Jul-23	32-93-I 12-Jul-23	32-93-I 18-Oct-23	32-93-I 6-May-24	32-93-I 29-Jul-24	32-93-I 16-Oct-24	32-93-II 26-May-15	32-93-II 13-Jul-15	32-93-II 13-Oct-15
Alkalinity	mg/L	500	260	266	274	259	263	258	266	264	264	Dry	279	282	268	272	267	277	274	283
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01		< 0.01	<0.01	<0.01	<0.01	<0.01			
Ammonia	mg/L	N/A	0.19	0.16	0.11	0.07	0.02	2.95	0.23	0.23	1.5		0.16	0.47	0.27	0.57	0.58	0.08	0.26	0.02
BOD	mg/L	N/A	< 3	< 3	< 3	9	< 3	< 3	< 3	< 3	< 3		< 3		<3	4	<3	< 2		< 2
Calcium	mg/L	N/A	113	124	125	105	123	117	120	112	119		117	108	111	125	121	122	125	128
COD	mg/L	N/A	70	18	19	14	6	23	23	7	15		14	30	18	40	35	< 5	7	8
Chloride	mg/L	250	100	101	107	98.6	117	105	108	115	117		116	131	109	117	116	79.8	83.8	84
Conductivity	umhos/cm	N/A	887	884	929	880	929	925	917	910	922		951	935	932	956	942	851	863	869
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005		<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	1.9	**13**	1	1.6	1.1	1.4	< 0.2	1	0.6		< 0.2	2.8	3.1	1.3	1.2	0.7	0.7	0.7
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.2
Hardness	mg/L	500	425	458	466	390	448	427	457	414	448		426	406	419	475	451	435	445	473
Ion Balance	%	N/A	1.66	4.47	3.96	2.13	1.23	2.19	3.9	2.26	1.26		2.55	7.91	0.302	4.07	2.15			
Iron	mg/L	0.3	0.202	**0.473**	0.122	0.025	0.01	< 0.005	**0.415**	0.009	**0.469**		**0.327**	0.242	0.008	**0.493**	**0.308**	0.202	0.024	0.053
Magnesium	mg/L	N/A	34.6	36.1	37.2	31.1	34.3	32.5	38.2	32.9	36.4		32.6	33.1	34.2	39.5	36.1	31.5	32.4	37
Manganese	mg/L	0.05	0.012	0.013	0.005	0.009	0.004	0.016	0.013	0.012	0.018		0.01	0.012	0.017	0.014	0.012	**0.065**	0.035	0.035
Nitrate	mg/L	10	0.06	< 0.05	0.07	0.12	< 0.05	0.08	< 0.05	< 0.05	< 0.05		0.06	<0.05	0.06	<0.05	0.18	< 0.1	< 0.1	< 0.1
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	0.09	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1
Tot Kjel N	mg/L	N/A	1.2	0.5	0.9	0.7	0.5	3.5	0.7	0.4	1.7		0.4	1.5	0.2	0.8	0.7	0.5	0.6	0.3
pH-Lab	pH unit	6.5-8.5	7.91	7.73	7.84	7.99	7.87	7.6	7.76	7.9	7.66		7.73	7.59	7.95	7.85	7.9	7.9	7.92	7.79
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.7	2.6	3.4	2.1	3.1	2.4	3	2.5	2.9		2.8	2.6	2.7	2.9	2.7	1.9	2.4	2.5
Sodium	mg/L	200	17.9	18.4	21.4	16.7	20.6	17.5	20.5	17.8	19.3		19.4	17.6	19.2	21.5	20	19.4	20	20.8
Sulphate	mg/L	500	49	50	51	47	55	49	50	50	51		52	57	45	49	48	50	52	51
TDS	mg/L	500	474	492	**510**	456	**511**	482	499	487	**505**		**509**	497	495	**509**	**501**	471	480	494
TSS	mg/L	N/A	4100	4900	72	100	90	25	1540	46	1170		1680	2200	44	233	540	3280	3950	1640
Turbidity	NTU	N/A	1760	1160	27.1	34.2	37.9	9.7	700	14.2	569		1260	819	24.3	181	423	1430	3100	1140
Colour	TCU	5	< 2	< 2	< 2	3	< 2	< 2	< 2	< 2	< 2		< 2	<2	<2	<2	<2	3	6	< 2
Aluminum	mg/L	0.1	0.06	0.07	0.05	0.08	0.05	0.03	0.08	0.04	0.06		0.07	0.07	0.05	0.05	0.06	0.03	0.04	0.03
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001		< 0.0001	<0.0001	<0.0001	<0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	< 0.0001		< 0.0001	<0.0001	0.0001	<0.0001	<0.0001	0.0011	0.0005	0.0006
Barium	mg/L	1	0.14	0.16	0.09	0.07	0.09	0.083	0.17	0.081	0.155		0.166	0.147	0.087	0.162	0.155	0.071	0.076	0.086
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.045	0.046	0.052	0.038	0.056	0.041	< 0.005	0.039	0.048		0.044	0.041	0.046	0.05	0.053	0.022	0.039	0.054
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	< 0.000010		< 0.000010	<0.000015	<0.000015	<0.000015	<0.000015	0.00002	< 0.00002	< 0.00002
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.0002	0.0034
Cobalt	mg/L	N/A	< 0.0001	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	0.0002	0.0003	<0.0001	0.0001	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0004	0.0006	0.0018	0.0014	0.0009	0.0006	0.0003	0.0004	0.0002		0.0003	0.0004	0.0001	0.0003	0.0005	< 0.0001	< 0.0001	0.0002
Lead	mg/L	0.01	0.00007	0.00015	0.00007	0.00008	0.00006	0.00006	0.00009	< 0.00002	0.00008		0.00009	0.00006	0.00004	0.00006	<0.00002	0.00005	0.00007	0.00004
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002		< 0.00002	<0.00002	0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0001	0.0001	0.0004	0.0003	0.0004	0.0003	0.0002	0.0003	0.0001		0.0002	0.0002	0.0003	0.0002	0.0002	0.0003	0.0002	0.0005
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	<0.0002	0.0004	<0.0002	<0.0002	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.852	0.869	0.936	0.736	0.879	0.767	0.929	0.789	0.897		0.875	0.826	0.86	0.931	0.877	0.744	0.747	0.8
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005		< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0021	0.0036	0.0012
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	0.008	0.014

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	32-93-II 17-May-16	32-93-II 13-Jul-16	32-93-II 24-May-17	32-93-II 19-Jul-17	32-93-II 17-Oct-17	32-93-II 8-May-18	32-93-II 24-Jul-18	32-93-II 11-Oct-18	32-93-II 8-May-19	32-93-II 5-May-20	32-93-II 13-Oct-20	32-93-II 4-May-21	32-93-II 5-Jul-21	32-93-II 13-Oct-21	32-93-II 3-May-22	32-93-II 26-Jul-22	32-93-II 18-Oct-23	32-93-II 6-May-24
Alkalinity	mg/L	500	277	284	274	272	274	271	263	281	225	257	265	265	285	256	263	277	289	272
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	0.01	<0.01
Ammonia	mg/L	N/A	0.02	0.2	0.23	0.2	0.22	0.09	0.04	0.05	0.14	0.05	0.22	0.14	0.18	0.23	0.22	0.18	0.67	0.38
BOD	mg/L	N/A	< 2	< 3	< 3	< 3	< 3	< 3	< 2	3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3		<3
Calcium	mg/L	N/A	116	116	110	116	117	111	111	122	86.3	111	115	110	116	120	120	120	111	110
COD	mg/L	N/A	7	< 5	87	120	22	14	< 5	< 5	7	6	75	8	55	52	20	8	14	99
Chloride	mg/L	250	81.6	88.1	71.1	72.3	79.7	93.1	94.2	96.6	83.5	96.2	103	101	111	118	104	105	132	109
Conductivity	umhos/cm	N/A	849	865	872	863	862	832	883	946	762	863	891	898	904	918	919	889	948	935
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		<0.005
DOC	mg/L	5	1	0.9	1.9	1.4	1.5	1.7	2	2	2.1	2	0.8	1.6	3.1	0.8	1.3	1.1	2.4	2.9
Fluoride	mg/L	1.5	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1
Hardness	mg/L	500	421	430	410	428	441	405	408	441	313	411	440	415	433	446	445	447	407	415
Ion Balance	%	N/A										1.05	2.75	0.174	0.942	1.35	3.02	2.24	7.97	0.855
Iron	mg/L	0.3	**0.401**	**0.409**	0.281	0.25	**0.515**	< 0.005	0.023	< 0.005	< 0.005	0.038	**0.361**	**0.412**	**0.42**	**0.445**	**0.438**	**0.38**	<0.005	**0.516**
Magnesium	mg/L	N/A	32.1	34.2	32.6	33.7	36.1	31	31.7	33.2	23.7	32.6	37.2	34.1	34.9	35.5	35.3	35.8	31.5	34.3
Manganese	mg/L	0.05	**0.058**	0.012	0.012	0.013	0.014	0.008	0.024	0.0013	0.011	0.008	0.012	0.012	0.013	0.015	0.012	0.012	0.001	0.013
Nitrate	mg/L	10	0.2	< 0.1	0.07	< 0.05	< 0.05	< 0.05	< 0.05	0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05	0.15	0.06
Nitrite	mg/L	1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05	0.07	< 0.05	< 0.05	<0.05	<0.05
Tot Kjel N	mg/L	N/A	0.2	2.7	7.4	2.3	0.6	0.2	0.2	0.5	0.8	0.2	1.2	0.5	2.3	1.3	0.5	0.5	1	0.9
pH-Lab	pH unit	6.5-8.5	8.01	7.71	7.8	7.74	7.83	7.85	7.87	7.9	7.75	7.97	7.86	7.92	7.71	7.66	7.47	7.83	7.87	7.85
Phenols	mg/L	N/A	< 0.001	0.044	< 0.001	< 0.001	< 0.001	< 0.001	0.004	0.005	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	<0.001	<0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1
Potassium	mg/L	N/A	1.9	2.5	2.2	2.5	2.6	2	2.5	2.6	1.6	2.3	3	2.5	3	2.8	2.7	2.6	2.8	2.9
Sodium	mg/L	200	19.9	17.9	16.4	17.2	16.6	17.1	19.1	19.3	12	16.7	19.6	17.9	21	19.5	18.5	19.5	19.4	19.2
Sulphate	mg/L	500	51	55	42	42	43	51	49	58	42	47	49	48	51	56	50	46	55	44
TDS	mg/L	500	470	484	439	447	460	468	466	**501**	384	460	486	473	**508**	**506**	489	496	**504**	497
TSS	mg/L	N/A	272	5600	25600	7900	14000	24	50	44	110	45	12800	1090	1850	1840	1270	828	16	4860
Turbidity	NTU	N/A	151	8600	12900	2900	910	11.8	15.3	18	74	25.6	1600	504	258	121	623	288	8.9	643
Colour	TCU	5	3	9	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	2	<2
Aluminum	mg/L	0.1	0.03	0.04	0.03	0.08	0.06	0.08	0.06	0.05	0.05	0.07	0.05	0.08	0.08	0.06	0.04	0.07	0.07	0.04
Antimony	mg/L	0.006	< 0.0001	< 0.0001	0.0001	0.0001	0.0001	< 0.0001	< 0.0001	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.025	0.0005	0.0002	0.0007	0.0002	0.0004	0.0002	0.0002	0.0002	0.0001	0.0001	0.0004	< 0.0001	0.0001	< 0.0001	0.0001	< 0.0001	0.0003	0.0001
Barium	mg/L	1	0.067	0.151	0.139	0.149	0.155	0.069	0.077	0.087	0.052	0.075	0.166	0.138	0.157	0.162	0.16	0.149	0.083	0.15
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001
Boron	mg/L	5	0.01	0.045	0.038	0.044	0.046	0.038	0.047	0.042	0.033	0.039	0.05	0.045	0.051	0.049	0.049	0.043	0.042	0.048
Cadmium	mg/L	0.005	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	<0.000015	<0.000015
Chromium	mg/L	0.05	< 0.0002	0.0003	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.0001	0.01	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	0.0002
Copper	mg/L	1	< 0.0001	< 0.0001	0.001	0.001	0.0003	< 0.0001	0.0002	0.0005	0.0006	0.0009	0.0023	0.0004	0.0005	0.0004	0.0005	0.0012	0.0006	<0.0001
Lead	mg/L	0.01	< 0.00002	0.00012	0.00012	0.0002	0.00005	0.00002	0.00005	0.00007	0.00004	0.00005	0.00015	0.00013	0.00012	0.00015	0.00265	0.0001	<0.00002	0.00005
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002
Molybdenum	mg/L	N/A	0.0004	0.0001	0.0002	0.0002	0.0001	0.0003	0.0005	0.0005	0.0002	0.0003	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0006	<0.0002
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001
Strontium	mg/L	N/A	0.725	0.878	0.794	0.878	0.749	0.701	0.732	0.775	0.532	0.757	0.931	0.832	0.871	0.895	0.853	0.88	0.816	0.891
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005
Vanadium	mg/L	N/A	0.0006	< 0.0001	0.0011	0.0015	0.0005	0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.008	< 0.005	< 0.005	< 0.005	<0.005	<0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	32-93-II 16-Oct-24	32-93-III 26-May-15	32-93-III 13-Jul-15	32-93-III 17-May-16	32-93-III 24-May-17	32-93-III 19-Jul-17	32-93-III 17-Oct-17	32-93-III 8-May-18	32-93-III 8-May-19	32-93-III 5-May-20	32-93-III 4-May-21	32-93-III 3-May-22	32-93-III 2-May-23	32-93-III 12-Jul-23	32-93-III 18-Oct-23	32-93-III 6-May-24	32-93-III 16-Oct-24	35-93-I 26-May-15
Alkalinity	mg/L	500	264	312	387	269	294	423	259	209	267	255	277	292	Dry	Dry	Dry	Dry	Dry	186
Unionized Ammonia	mg/L	N/A	<0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01						
Ammonia	mg/L	N/A	0.72	0.18	0.28	0.06	0.06	0.1	0.07	0.41	0.27	0.08	0.34	0.35						< 0.01
BOD	mg/L	N/A	<3	34		2	< 3	< 3	< 3	< 3	< 3	< 3	3	4						
Calcium	mg/L	N/A	122	131	175	116	130	147	119	101	139	126	114	144						48.4
COD	mg/L	N/A	28	294	38	72	68	59	61	86	177	99	276	208						< 5
Chloride	mg/L	250	117	125	161	139	127	146	78.8	64.6	169	171	153	169						22.9
Conductivity	umhos/cm	N/A	940	1030	1260	939	1130	1410	834	633	1080	1070	1060	1160						471
Cyanide	mg/L	0.2	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005						
DOC	mg/L	5	1.2	1	1.4	1.4	3	3.3	2.7	1.8	3	2	2.6	1.6						1
Fluoride	mg/L	1.5	<0.1	0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1						0.4
Hardness	mg/L	500	448	371	488	338	386	441	383	339	427	394	361	451						256
Ion Balance	%	N/A	2.04									0.399	3.02	3.52						
Iron	mg/L	0.3	0.005	< 0.005	< 0.005	0.006	< 0.005	0.015	0.005	< 0.005	< 0.005	0.035	0.029	**1.24**						0.029
Magnesium	mg/L	N/A	34.9	10.9	12.6	11.6	14.6	18.1	20.8	21	19.3	19.1	18.4	22.3						32.9
Manganese	mg/L	0.05	0.004	**0.069**	**0.271**	**0.051**	0.024	**0.519**	**0.113**	**0.111**	**0.245**	**0.205**	**0.144**	**0.422**						< 0.001
Nitrate	mg/L	10	0.14	0.1	0.2	0.2	0.36	0.06	0.11	0.82	0.05	0.11	0.33	0.1						0.1
Nitrite	mg/L	1	<0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.09	< 0.05						< 0.1
Tot Kjel N	mg/L	N/A	1.1	5.7	1.6	1.4	1.3	1.6	1.4	2.5	6.4	2.7	7.1	0.6						0.2
pH-Lab	pH unit	6.5-8.5	7.99	7.87	7.77	8	7.94	7.63	7.7	7.97	7.68	7.99	7.4	7.51						8.09
Phenols	mg/L	N/A	<0.001	< 0.001		< 0.001	< 0.001	0.003	0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.001						< 0.001
Phosphorus	mg/L	N/A	<0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	3.12	< 0.1	< 0.1	< 0.1						< 0.1
Potassium	mg/L	N/A	3	1.6	1.6	0.9	1.2	1.6	3.5	1.2	1.8	1.5	2.1	1.9						3.9
Sodium	mg/L	200	20.8	59.5	82.5	39.8	50.8	44	19.8	15.8	62.2	60.9	56	61.1						8.9
Sulphate	mg/L	500	49	25	13	19	19	18	36	32	16	26	21	19						25
TDS	mg/L	500	500	**540**	**679**	489	**520**	**629**	434	361	**569**	**558**	**532**	**595**						254
TSS	mg/L	N/A	206	20000	2260	6800	2040	690	2080	10000	5050	1700	3850	4900						
Turbidity	NTU	N/A	153	9200	1150	2910	1490	572	1300	2050	2870	821	1530	2250						
Colour	TCU	5	2	5	**10**	4	5	7	7	2	6	< 2	9	4						
Aluminum	mg/L	0.1	0.07	0.03	0.04	0.03	0.03	0.05	0.06	0.06	0.07	0.08	0.08	0.04						0.01
Antimony	mg/L	0.006	0.0002	0.0001	< 0.0001	< 0.0001	0.0001	0.0002	0.0003	0.0001	0.0001	0.0001	0.0001	< 0.0001						< 0.0001
Arsenic	mg/L	0.025	0.0002	0.0003	0.0007	< 0.0001	0.0007	0.0006	0.0003	< 0.0001	0.0002	0.0001	0.0002	0.0004						0.0005
Barium	mg/L	1	0.092	0.089	0.098	0.06	0.068	0.081	0.073	0.053	0.072	0.069	0.063	0.08						0.133
Beryllium	mg/L	N/A	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002						< 0.002
Boron	mg/L	5	0.054	< 0.005	0.02	< 0.005	0.024	0.04	0.038	0.032	0.025	0.022	0.023	0.024						0.135
Cadmium	mg/L	0.005	<0.000015	0.00003	< 0.00002	< 0.00002	0.000014	0.000015	0.000016	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015						< 0.00002
Chromium	mg/L	0.05	<0.001	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001						< 0.0002
Cobalt	mg/L	N/A	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	< 0.005	0.0002	< 0.005	< 0.005						< 0.005
Copper	mg/L	1	0.0011	0.0004	0.0005	0.0004	0.0016	0.0015	0.0008	0.0001	0.0012	0.0005	0.0016	0.0004						< 0.0001
Lead	mg/L	0.01	0.00007	< 0.00002	0.00002	< 0.00002	0.00004	0.00006	< 0.00002	< 0.00002	0.00005	0.00011	0.00008	0.00004						0.00002
Mercury	mg/L	0.001	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002						< 0.00002
Molybdenum	mg/L	N/A	0.0005	0.0002	0.0001	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002						0.0002
Nickel	mg/L	N/A	0.0006	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01						< 0.01
Selenium	mg/L	0.01	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001						< 0.001
Silver	mg/L	N/A	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001						< 0.00002
Strontium	mg/L	N/A	0.87	0.411	0.537	0.331	0.401	0.489	0.353	0.39	0.483	0.504	0.477	0.548						1.14
Thallium	mg/L	N/A	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005						< 0.00005
Vanadium	mg/L	N/A	<0.0001	0.0019	0.0055	0.0004	0.0011	0.0017	0.0003	0.0002	0.0002	0.0002	0.0003	< 0.0001						0.0014
Zinc	mg/L	5	<0.005	< 0.005	0.007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005						< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	35-93-I 13-Oct-15	35-93-I 11-May-16	35-93-I 12-Oct-16	35-93-I 24-May-17	35-93-I 16-Oct-17	35-93-I 7-May-18	35-93-I 10-Oct-18	35-93-I 10-May-19	35-93-I 9-Oct-19	35-93-I 5-May-20	35-93-I 13-Oct-20	35-93-I 4-May-21	35-93-I 13-Oct-21	35-93-I 3-May-22	35-93-I 25-Oct-22	35-93-I 2-May-23	35-93-I 18-Oct-23	35-93-I 6-May-24
Alkalinity	mg/L	500	183	185	180	188	179	181	175	191	169	175	169	183	182	177	175	176	188	180
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.04	0.03	0.08	0.07	0.06	0.1	0.15	0.11	0.07	0.13	0.12	0.11	0.26	0.11	0.21	0.2	0.32	0.1
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	46.4	38	43.6	41	44.4	43	44.8	41.4	44.3	42.3	41	38.4	40.2	40.2	36.9	41.5	40	42.7
COD	mg/L	N/A	< 5	< 5	< 5	5	< 5	< 5	< 5	5	< 5	15	6	18	7	5	< 5	< 5	16	<5
Chloride	mg/L	250	21.8	20	20.7	16.8	23.4	22	24.4	24.8	24	22.2	21.9	19.1	20.1	21.1	26.8	24.2	21.3	22.1
Conductivity	umhos/cm	N/A	449	451	443	455	444	435	459	440	432	447	429	422	418	433	425	447	445	464
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.2	0.9	1.3	1.3	1.2	1.5	2.2	2.8	2.2	2.2	2.2	2.8	1.6	1.9	1.1	1.9	2.9	3.1
Fluoride	mg/L	1.5	0.5	0.4	0.5	0.6	0.4	< 0.1	< 0.1	0.4	< 0.1	< 0.1	< 0.1	< 0.1	0.4	< 0.1	< 0.1	0.3	0.3	0.3
Hardness	mg/L	500	259	209	231	215	240	234	230	218	230	223	215	212	214	211	206	223	212	225
Ion Balance	%	N/A										2.95	4.17	1.5	1.53	1.36	1.31	1.15	1.24	1.86
Iron	mg/L	0.3	0.035	< 0.005	0.018	0.011	0.009	0.022	0.015	0.021	0.012	0.045	0.008	0.021	0.118	0.032	0.039	< 0.005	<0.005	0.013
Magnesium	mg/L	N/A	34.7	27.9	29.7	27.5	31.4	30.7	28.8	27.9	29.1	28.6	27.3	28.2	27.5	27	27.7	28.9	27.3	28.8
Manganese	mg/L	0.05	0.002	< 0.001	0.006	0.004	0.006	0.001	0.001	0.004	0.002	0.005	0.002	0.008	0.015	0.007	0.006	0.001	<0.001	0.003
Nitrate	mg/L	10	0.1	0.2	0.1	< 0.05	< 0.05	0.07	< 0.05	0.28	< 0.05	0.16	0.06	< 0.05	0.14	0.22	0.2	0.1	0.37	0.07
Nitrite	mg/L	1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.11	< 0.05	< 0.05	0.08	<0.05	<0.05
Tot Kjel N	mg/L	N/A	< 0.1	0.1	0.4	0.4	0.2	0.2	0.1	0.2	0.2	0.6	0.2	0.3	0.4	0.2	0.3	0.2	0.4	0.1
pH-Lab	pH unit	6.5-8.5	8.05	8.08	8.12	8.1	8.09	8.12	8.01	8.12	8.05	7.97	8.04	8.16	7.9	7.86	7.96	8.03	7.5	7.86
Phenols	mg/L	N/A	< 0.001	< 0.001	0.004	0.001	0.003	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.13	0.07	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1
Potassium	mg/L	N/A	3.8	3.1	3.5	3	3.7	4.1	3.5	3.5	3.5	3.4	3.3	3.1	3.3	3.1	3.3	3.4	3.4	3.4
Sodium	mg/L	200	8.4	7.7	8.9	7.7	7.8	8.2	7.8	7.9	8.1	7.2	7.7	7.3	7.6	7.2	7.4	7.2	7.1	7.3
Sulphate	mg/L	500	19	23	16	17	18	23	21	22	14	22	16	15	16	17	19	25	19	25
TDS	mg/L	500	245	232	232	227	237	239	235	243	225	231	219	221	224	222	227	236	230	240
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.01	0.01	0.05	< 0.01	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.04	0.04	< 0.01	0.01	0.02
Antimony	mg/L	0.006	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.025	0.0005	0.0004	0.0006	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003	0.0004	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003
Barium	mg/L	1	0.139	0.115	0.132	0.144	0.164	0.147	0.134	0.139	0.169	0.14	0.163	0.169	0.207	0.188	0.199	0.181	0.18	0.207
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001
Boron	mg/L	5	0.156	0.082	0.134	0.113	0.146	0.131	0.122	0.118	0.121	0.121	0.12	0.106	0.113	0.107	0.1	0.11	0.119	0.114
Cadmium	mg/L	0.005	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.00002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015
Chromium	mg/L	0.05	0.0019	< 0.0002	0.0008	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.006	< 0.005	< 0.005	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	0.0001
Copper	mg/L	1	0.0002	< 0.0001	0.0003	0.0033	0.0005	0.0002	0.0004	0.0008	0.0002	0.0004	0.0018	0.0006	0.0003	0.0006	0.0003	0.0003	0.0005	0.0002
Lead	mg/L	0.01	< 0.00002	< 0.00002	0.00003	0.00133	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002	0.00002	0.00006	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002
Molybdenum	mg/L	N/A	0.0003	0.0004	0.0003	0.0005	0.0003	0.0005	0.0003	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004	0.0005	0.0005	0.0004	0.0004	0.0005
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0002	0.0003
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001
Strontium	mg/L	N/A	1.09	0.868	1.02	0.927	0.93	1.06	0.958	1.02	0.969	0.972	0.939	0.931	0.983	0.939	0.963	1.01	0.974	1.05
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005
Vanadium	mg/L	N/A	0.0008	< 0.0001	0.0004	0.0006	0.0004	0.0001	0.0001	0.0001	< 0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0001	0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry
Summary - General Water Quality

Parameters	Units	ODWQS	35-93-I 16-Oct-24	35-93-I (Dup) 16-Oct-24	35-93-II 26-May-15	35-93-II 13-Oct-15	35-93-II 11-May-16	35-93-II 12-Oct-16	35-93-II 24-May-17	35-93-II 16-Oct-17	35-93-II 7-May-18	35-93-II 10-Oct-18	35-93-II 10-May-19	35-93-II 7-Oct-19	35-93-II 5-May-20	35-93-II 13-Oct-20	35-93-II 4-May-21	35-93-II 13-Oct-21	35-93-II 3-May-22	35-93-II 25-Oct-22
Alkalinity	mg/L	500	180	186	321	380	326	319	334	330	292	235	298	324	266	276	298	319	283	302
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.39	0.27	0.13	0.03	0.06	0.08	0.06	0.03	0.12	1.3	0.09	0.05	0.02	0.15	0.04	0.06	1.56	0.06
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	45.4	45.9	142	179	101	191	127	130	114	81.2	136	154	129	141	109	126	140	133
COD	mg/L	N/A	<5	7	5	23	58	< 5	31	15	5	7	14	34	9	36	62	61	17	27
Chloride	mg/L	250	25.4	23.5	19.1	45.2	11.3	95.6	28.1	28.9	17.3	25.2	51.8	63.5	105	148	74.4	121	156	239
Conductivity	umhos/cm	N/A	470	471	740	968	683	1010	758	749	614	606	757	874	880	1050	808	977	1080	1240
Cyanide	mg/L	0.2																		
DOC	mg/L	5	2.2	2.5	1.8	1.6	1.4	1.4	2	1.7	2.3	4.6	3.3	3	1.3	1.4	2.2	1.6	1.4	< 0.2
Fluoride	mg/L	1.5	0.4	0.4	0.1	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	239	243	420	**525**	304	**552**	369	382	340	300	380	447	360	399	306	360	388	384
Ion Balance	%	N/A	4.43	4.69											3.36	3.55	1.15	2.04	2.29	4.72
Iron	mg/L	0.3	0.01	0.009	0.012	0.102	0.006	0.186	< 0.005	< 0.005	0.028	0.013	< 0.005	0.006	0.025	0.007	0.006	0.03	< 0.005	< 0.005
Magnesium	mg/L	N/A	30.5	31.2	15.8	18.6	12.7	17.8	12.7	13.8	13.3	23.6	9.76	15.1	9.18	11.2	8.05	11	9.34	12.6
Manganese	mg/L	0.05	0.002	0.003	0.017	0.008	0.008	0.017	0.002	0.009	0.003	0.019	< 0.001	0.014	0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001
Nitrate	mg/L	10	0.09	0.07	0.3	1.7	0.1	0.7	< 0.05	0.09	< 0.05	0.08	0.2	0.08	0.31	0.06	0.28	0.11	0.25	0.2
Nitrite	mg/L	1	0.08	0.09	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05	0.24	0.1	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.5	0.5	0.9	1.5	0.5	1.8	1	0.3	0.5	1.6	0.4	0.9	0.5	0.4	1.7	1.4	2.5	0.7
pH-Lab	pH unit	6.5-8.5	8.11	8.16	7.67	7.51	7.63	7.69	7.95	7.87	7.9	7.77	7.88	7.79	7.76	7.72	7.87	7.9	7.74	7.72
Phenols	mg/L	N/A	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	0.02	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.57	2.7	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	3.8	3.8	1.1	1.4	0.9	1.2	0.9	1.2	1.6	1.9	0.8	1.4	0.7	1.1	0.7	1.4	0.9	1.5
Sodium	mg/L	200	7.2	7.2	22.3	28.7	15.5	40.6	24.6	25.3	16.6	8.3	23.8	27.6	49	67.4	50	81.1	71.5	104
Sulphate	mg/L	500	21	19	51	67	40	62	29	27	24	47	29	44	20	22	19	26	21	32
TDS	mg/L	500	243	244	445	**577**	377	**603**	423	424	362	330	430	500	473	**557**	440	**558**	**570**	**703**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	<0.01	0.01	0.04	0.06	0.03	0.09	0.03	0.07	0.07	0.06	0.08	0.09	0.08	0.08	0.07	0.06	0.08	0.09
Antimony	mg/L	0.006	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0003	0.0003	0.0001	0.0002	< 0.0001	0.0003	0.0001	0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	0.167	0.165	0.101	0.127	0.069	0.122	0.08	0.109	0.086	0.236	0.078	0.121	0.074	0.1	0.061	0.094	0.085	0.112
Beryllium	mg/L	N/A	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.138	0.139	< 0.005	0.018	< 0.005	0.02	0.014	0.025	0.011	0.043	< 0.005	0.018	0.014	0.018	0.011	0.022	0.012	0.009
Cadmium	mg/L	0.005	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.00002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012
Chromium	mg/L	0.05	<0.001	<0.001	< 0.0002	0.0048	< 0.0002	0.0025	< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	<0.0001	<0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0006	0.0003	< 0.0001	0.0008	< 0.0001	0.0006	0.0009	0.0004	0.001	0.0007	0.0004	0.0004	0.0011	0.0028	0.0009	0.0008	0.0011	0.0007
Lead	mg/L	0.01	<0.00002	<0.00002	< 0.00002	0.00019	< 0.00002	0.00031	< 0.00002	< 0.00002	0.00004	0.00013	< 0.00002	< 0.00002	0.00006	0.00009	< 0.00002	0.00006	0.00002	< 0.00004
Mercury	mg/L	0.001	<0.00002	<0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0005	0.0003	0.0002	0.0002	0.0003	0.0001	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0004
Nickel	mg/L	N/A	0.0005	0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.04	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001
Silver	mg/L	N/A	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.06	1.06	0.365	0.426	0.246	0.424	0.317	0.296	0.3	0.753	0.322	0.376	0.281	0.326	0.271	0.359	0.345	0.418
Thallium	mg/L	N/A	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0001	0.0001	0.0019	0.0017	< 0.0001	0.0011	< 0.0001	0.0008	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.009	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	35-93-II 2-May-23	35-93-II 18-Oct-23	35-93-II 6-May-24	35-93-II 16-Oct-24	36-93 26-May-15	36-93 13-Oct-15	36-93 11-May-16	36-93 18-Oct-16	36-93 24-May-17	36-93 16-Oct-17	36-93 7-May-18	36-93 10-Oct-18	36-93 10-May-19	36-93 8-Oct-19	36-93 5-May-20	36-93 13-Oct-20	36-93 4-May-21	36-93 13-Oct-21
Alkalinity	mg/L	500	266	325	313	277	238	236	236	228	241	231	232	332	216	223	227	217	230	246
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.42	1.1	0.05	0.17	0.19	0.17	0.21	0.2	0.16	0.23	0.22	0.26	0.21	0.16	0.17	0.26	0.22	0.21
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	84.2	110	117	121	91.6	91.3	70	82.7	78.6	86.6	81.9	139	89.2	88	83.2	82.3	79.1	87.8
COD	mg/L	N/A	< 5	<5	36	135	25	30	70	41	9	49	< 5	20	47	333	21	40	23	7
Chloride	mg/L	250	40.6	148	104	147	21.4	22.1	21.4	25.3	19.8	22.9	27.3	30.2	32.4	29.7	27	26.8	< 0.5	26.3
Conductivity	umhos/cm	N/A	639	1100	956	1030	604	603	590	602	614	593	588	810	600	597	595	591	591	600
Cyanide	mg/L	0.2																		
DOC	mg/L	5	2.1	2.8	3.8	2.8	1.6	1.6	1.4	1.8	1.8	2	2.2	2.7	3.1	2.9	2.6	2.7	2.6	1.4
Fluoride	mg/L	1.5	< 0.1	<0.1	<0.1	<0.1	0.2	0.2	0.2	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	225	312	339	360	339	349	268	307	292	324	313	403	327	329	311	299	300	323
Ion Balance	%	N/A	8.77	7.46	0.471	1.86											3.93	3.13	5.29	2.79
Iron	mg/L	0.3	< 0.005	0.005	0.03	<0.005	**1.06**	**1.12**	**0.865**	**0.866**	**0.852**	**0.873**	**0.987**	0.016	**1.21**	**1.25**	**1.04**	**1.14**	**0.733**	**1.18**
Magnesium	mg/L	N/A	3.54	9.04	11.5	13.7	26.7	29.3	22.7	24.4	23.2	26.2	26.4	13.6	25.2	26.5	25.1	22.8	24.8	25.3
Manganese	mg/L	0.05	< 0.001	0.001	0.001	<0.001	0.022	0.022	0.02	0.021	0.02	0.022	0.021	0.007	0.025	0.021	0.02	0.019	0.018	0.024
Nitrate	mg/L	10	0.07	0.24	0.14	<0.05	0.2	0.1	0.2	0.2	< 0.05	0.13	0.14	0.52	0.29	< 0.05	0.23	0.12	< 0.05	0.06
Nitrite	mg/L	1	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	**16.6**	0.08
Tot Kjel N	mg/L	N/A	0.8	0.9	0.6	0.5	0.9	0.2	0.7	0.6	0.3	0.4	2.2	0.6	0.6	4.2	0.5	0.6	0.5	0.3
pH-Lab	pH unit	6.5-8.5	7.9	7.49	7.79	7.91	7.91	7.85	7.83	8.07	7.89	7.98	8.01	7.56	8.02	7.99	7.88	7.94	8.09	7.92
Phenols	mg/L	N/A	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.003	< 0.001	0.003	< 0.001	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001
Phosphorus	mg/L	N/A	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1.63	22.6	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	0.4	1.5	1.4	1.9	1.7	1.8	1.4	1.6	1.3	1.8	1.9	1.5	1.8	2	1.6	1.8	1.6	2
Sodium	mg/L	200	25.4	77	65.8	75.6	9.2	8.3	8	9.5	8.3	8.2	9.4	20.7	9	9.1	8.4	8.6	8.7	8.9
Sulphate	mg/L	500	10	24	19	23	49	49	49	48	39	42	48	38	52	48	42	46	1	45
TDS	mg/L	500	324	**589**	**509**	**552**	345	345	316	330	316	327	335	443	340	339	325	320	255	344
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.04	0.03	0.06	0.03	0.03	0.02	0.02	0.04	0.02	0.05	0.05	0.08	0.06	0.06	0.06	0.05	0.05	0.04
Antimony	mg/L	0.006	< 0.0001	0.0002	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0003	0.0003	0.0002	0.0003	0.0003	0.0004	0.0002	0.0002	0.0002	0.0001	0.0002	0.0001	0.0002
Barium	mg/L	1	0.04	0.08	0.099	0.102	0.259	0.27	0.197	0.23	0.215	0.27	0.259	0.107	0.243	0.264	0.23	0.245	0.225	0.255
Beryllium	mg/L	N/A	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.007	0.02	0.017	0.028	0.031	0.048	0.008	0.048	0.038	0.053	0.047	0.015	0.039	0.051	0.043	0.05	0.042	0.05
Cadmium	mg/L	0.005	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.00002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	<0.001	<0.001	<0.001	< 0.0002	0.0027	< 0.0002	< 0.0002	< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	<0.0001	0.0002	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.006	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0009	0.0015	0.0006	0.0007	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0028	0.0001	0.0002	0.0004	0.0005	< 0.0001	< 0.0001	0.0061	0.0003	0.0004
Lead	mg/L	0.01	< 0.00002	<0.00002	0.00009	<0.00002	< 0.00002	0.00003	< 0.00002	0.00002	0.00021	0.00004	0.00003	0.00003	0.00014	< 0.00002	0.00005	0.00006	< 0.00002	0.00011
Mercury	mg/L	0.001	< 0.00002	0.00003	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0002	0.0002	0.0003	0.0002	0.0003	0.0008	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Nickel	mg/L	N/A	< 0.01	0.0003	0.0002	0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	<0.0001	<0.0001	<0.0001	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.195	0.32	0.389	0.422	0.821	0.82	0.622	0.736	0.697	0.686	0.788	0.36	0.806	0.804	0.741	0.749	0.752	0.797
Thallium	mg/L	N/A	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	<0.0001	<0.0001	<0.0001	0.0016	0.0009	< 0.0001	0.0005	0.0012	0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	36-93 3-May-22	36-93 25-Oct-22	36-93 2-May-23	36-93 18-Oct-23	36-93 6-May-24	36-93 16-Oct-24	37-93-I 26-May-15	37-93-I 13-Oct-15	37-93-I 11-May-16	37-93-I 12-Oct-16	37-93-I 24-May-17	37-93-I 16-Oct-17	37-93-I 7-May-18	37-93-I 11-Oct-18	37-93-I 10-May-19	37-93-I 7-Oct-19	37-93-I 5-May-20	37-93-I 13-Oct-20
Alkalinity	mg/L	500	233	245	239	259	242	239	238	236	236	207	238	220	239	216	229	203	230	224
Unionized Ammonia	mg/L	N/A														< 0.01				
Ammonia	mg/L	N/A	0.31	0.2	0.43	1.74	0.21	0.49	0.19	0.17	0.23	0.27	0.27	0.25	0.32	0.24	0.28	0.21	0.25	0.28
BOD	mg/L	N/A														9				
Calcium	mg/L	N/A	86.3	79.4	78	82.4	88.9	91.2	91.6	91.3	94.6	72.4	103	108	111	92.6	113	75	113	113
COD	mg/L	N/A	9	< 5	< 5	12	12	39	25	30	< 5	< 5	< 5	< 5	8	< 5	8	< 5	22	< 5
Chloride	mg/L	250	30	39.4	34	26.2	31.2	40	21.4	22.1	185	49.5	150	140	185	116	191	59.4	170	173
Conductivity	umhos/cm	N/A	624	620	631	627	645	660	604	603	1110	645	1120	973	1060	876	1090	647	1070	1070
Cyanide	mg/L	0.2														< 0.005				
DOC	mg/L	5	2.2	1.3	1.1	3.8	3.5	2.6	1.6	1.6	0.6	1.4	1.3	1.3	1.5	2.4	2.3	2.3	1.4	1.4
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.2	0.2	0.2	0.3	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	320	307	299	308	329	346	339	349	414	316	435	470	482	415	478	323	482	465
Ion Balance	%	N/A	3.41	3.98	2.62	1.23	3.39	4.8											4.04	2.02
Iron	mg/L	0.3	**0.881**	**1.22**	**1.26**	**1.25**	**2.11**	**1.12**	**1.06**	**1.12**	**0.754**	**0.491**	**0.711**	**0.716**	**0.965**	**4.24**	**0.966**	**0.65**	**1.11**	**1.12**
Magnesium	mg/L	N/A	25.4	26.5	25.2	24.8	26	28.6	26.7	29.3	43.2	32.7	43.3	48.6	49.7	44.7	47.6	32.9	48.5	44.5
Manganese	mg/L	0.05	0.026	0.017	0.021	0.022	0.041	0.022	0.022	0.022	0.018	0.012	0.016	0.02	0.019	0.021	0.018	0.011	0.019	0.019
Nitrate	mg/L	10	0.11	0.19	0.17	0.28	0.37	<0.05	0.2	0.1	0.1	< 0.1	< 0.05	< 0.05	< 0.05	0.07	0.2	< 0.05	0.09	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.11	< 0.05
Tot Kjel N	mg/L	N/A	0.5	0.4	0.5	1.3	0.2	0.7	0.9	0.2	0.4	0.7	0.3	0.4	0.4	0.3	0.4	0.4	0.4	0.4
pH-Lab	pH unit	6.5-8.5	7.8	7.83	7.94	7.47	7.84	8.03	7.91	7.85	7.74	8.04	7.8	8.02	7.87	7.93	7.96	8.02	7.8	7.75
Phenols	mg/L	N/A	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.001	0.002	0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.04	0.22	< 0.1	< 0.1
Potassium	mg/L	N/A	1.7	2	1.9	2	1.8	2.1	1.7	1.8	2.3	2.3	2.4	2.8	3.3	3.2	3	2.6	2.9	2.9
Sodium	mg/L	200	9	8.8	9	8.5	9.4	12.2	29.8	21.2	27.1	16.6	28.7	28	38.2	29.5	38.2	19.1	36.3	34.8
Sulphate	mg/L	500	45	57	51	43	46	46	49	49	59	49	45	46	57	53	62	45	52	56
TDS	mg/L	500	338	362	344	325	335	343	345	345	**554**	348	**516**	**506**	**588**	473	**594**	356	**562**	**560**
TSS	mg/L	N/A														660				
Turbidity	NTU	N/A														219				
Colour	TCU	5														2				
Aluminum	mg/L	0.1	0.07	0.06	0.02	0.03	0.06	0.03	0.03	0.009	0.02	0.03	0.03	0.07	0.07	0.06	0.07	0.05	0.06	0.07
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001		< 0.0001	0.0002	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0001	0.0002	0.0001	0.0002	0.0002	0.0001	0.0003	< 0.0002	0.0003	0.0003	0.0008	0.0005	0.0001	0.0006	0.0001	0.0001	0.0001	0.0002
Barium	mg/L	1	0.242	0.289	0.247	0.245	0.301	0.269	0.254	0.174	0.197	0.135	0.209	0.257	0.26	0.219	0.257	0.148	0.25	0.258
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.000007	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.042	0.037	0.045	0.049	0.046	0.049	0.041	0.0596	0.015	0.064	0.05	0.063	0.052	0.067	0.05	0.066	0.055	0.057
Cadmium	mg/L	0.005	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.000003	< 0.00002	< 0.00002	< 0.000014	< 0.000014	0.000043	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.00003	< 0.0002	0.0012	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	<0.0001	0.0002	0.0001	< 0.005	0.000004	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	0.008	< 0.005	< 0.0001	< 0.005
Copper	mg/L	1	0.0005	0.0002	0.0001	0.0003	0.0003	0.0004	< 0.0001	0.0002	< 0.0001	0.0001	0.0017	0.0003	0.0004	0.001	0.0006	0.0003	0.0005	0.0012
Lead	mg/L	0.01	0.00008	< 0.00002	< 0.00002	0.00002	0.00021	0.00003	0.00006	0.00005	< 0.00002	< 0.00002	0.00007	< 0.00002	0.00006	0.00009	< 0.00002	< 0.00002	< 0.00004	0.00004
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	0.00002	<0.00002	<0.00002	< 0.00002	< 0.00001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00014	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	<0.0002	<0.0002	0.0007	< 0.01	< 0.0001	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	0.000006	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.77	0.827	0.785	0.755	0.823	0.833	1.5	1.16	1.1	0.928	1.26	1.19	1.39	1.31	1.46	0.943	1.38	1.37
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0013	0.00011	< 0.0001	0.0004	0.0012	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	0.002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	37-93-I 4-May-21	37-93-I 13-Oct-21	37-93-I 3-May-22	37-93-I 25-Oct-22	37-93-I 2-May-23	37-93-I 18-Oct-23	37-93-I 6-May-24	37-93-I 16-Oct-24	37-93-II 26-May-15	37-93-II 13-Oct-15	37-93-II 11-May-16	37-93-II 12-Oct-16	37-93-II 24-May-17	37-93-II 16-Oct-17	37-93-II 7-May-18	37-93-II 10-Oct-18	37-93-II 10-May-19	37-93-II 7-Oct-19
Alkalinity	mg/L	500	248	260	244	231	251	260	253	250	305	317	304	319	316	303	338	305	301	315
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.26	0.31	0.33	0.23	0.4	0.68	0.29	0.87	0.16	0.13	0.15	0.15	0.15	0.22	0.14	0.15	0.16	0.11
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	103	115	115	96.8	108	102	113	122	170	169	125	160	147	166	147	138	149	160
COD	mg/L	N/A	9	9	10	< 5	9	12	9	7	20	74	65	< 5	14	35	< 5	121	90	19
Chloride	mg/L	250	168	175	173	205	215	183	190	223	193	214	187	221	177	198	193	**258**	240	**252**
Conductivity	umhos/cm	N/A	1070	1090	1140	1020	1190	1160	1190	1240	1310	1400	1260	1480	1360	1350	1240	1510	1350	1400
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.5	0.7	1.2	< 0.2	1	2.2	2.4	2.5	0.7	0.8	0.6	1	1.8	1.8	1.8	1.5	2.2	2
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.1	0.1	0.2	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	451	479	473	429	454	430	471	**508**	**533**	**537**	401	500	459	**521**	465	419	464	**501**
Ion Balance	%	N/A	0.0396	1.76	2.83	6.66	5.09	4.13	1.41	0.757										
Iron	mg/L	0.3	**0.827**	**1.33**	**1.25**	**0.976**	**1.16**	**1.02**	**1.12**	**1.45**	**2.15**	**2.5**	**1.8**	**0.695**	**0.981**	**1.78**	**1.65**	0.015	**0.81**	**2.19**
Magnesium	mg/L	N/A	47	46.7	45.1	45.5	44.5	42.7	46.2	49.1	26	27.8	21.6	24.7	22	25.8	23.8	18.1	22.3	24.5
Manganese	mg/L	0.05	0.016	0.02	0.023	0.016	0.019	0.018	0.02	0.021	**0.056**	**0.055**	0.043	**0.055**	0.05	**0.06**	0.05	0.02	0.046	**0.051**
Nitrate	mg/L	10	0.24	< 0.05	0.07	< 0.05	0.07	0.06	<0.05	<0.05	0.1	< 0.1	0.1	0.1	< 0.05	< 0.05	< 0.05	< 0.05	0.2	< 0.05
Nitrite	mg/L	1	< 0.05	0.2	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.4	0.5	0.4	0.4	0.6	0.7	0.3	0.9	1.3	0.5	0.7	1.5	0.4	0.6	1.3	1.7	2.2	0.5
pH-Lab	pH unit	6.5-8.5	8.18	7.88	7.81	7.81	7.9	7.52	7.79	7.96	7.74	7.64	7.62	7.87	7.67	7.87	7.89	7.63	7.87	7.83
Phenols	mg/L	N/A	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.003	0.001	< 0.001	0.021	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	4.3	0.94
Potassium	mg/L	N/A	2.8	3.1	2.9	3.1	3.1	3.1	3.1	3.3	1.9	2.3	1.4	2.1	1.5	2.2	1.9	2.9	2	2.4
Sodium	mg/L	200	40.6	45.9	45.7	38.1	46.7	43.1	50.8	52.1	89.3	101	68	120	90.3	100	90.3	158	106	120
Sulphate	mg/L	500	58	58	57	70	66	55	51	55	70	70	69	68	53	64	62	64	70	63
TDS	mg/L	500	**569**	**601**	**587**	**599**	**635**	**622**	**640**	**667**	**736**	**777**	**657**	**789**	**682**	**741**	**723**	**823**	**771**	**813**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.07	0.06	0.08	0.07	0.03	0.03	0.04	0.04	0.04	0.04	0.03	0.05	0.04	0.1	0.07	0.06	0.08	0.09
Antimony	mg/L	0.006	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	0.0001	0.0001	< 0.0001	0.0001	< 0.0001	0.0002
Arsenic	mg/L	0.025	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0007	0.0003	0.0005	0.0012	0.001	0.0003	0.0002	0.0003	0.0004
Barium	mg/L	1	0.228	0.284	0.274	0.255	0.278	0.252	0.329	0.308	0.355	0.384	0.26	0.351	0.287	0.392	0.318	0.302	0.298	0.372
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.051	0.054	0.047	0.044	0.05	0.054	0.048	0.051	0.013	0.036	< 0.005	0.044	0.024	0.039	0.028	0.044	0.027	0.041
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000012	<0.000015	<0.000015	<0.000015	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	0.000049	< 0.00002	< 0.000015	< 0.000029
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.0002	0.0037	< 0.0002	0.0018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	0.007	<0.0001	0.0002	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0001	0.013	0.01	< 0.005
Copper	mg/L	1	0.0005	0.0002	0.0006	0.0002	< 0.0001	0.0002	0.0002	0.0008	0.0004	0.0008	0.0004	0.0008	0.0039	0.0008	0.0005	0.0015	0.0012	0.0004
Lead	mg/L	0.01	< 0.00002	< 0.00004	0.0001	0.00002	< 0.00004	<0.00002	<0.00002	<0.00002	0.00008	< 0.00002	< 0.00002	0.00006	0.00022	< 0.00002	< 0.00002	0.00003	0.00003	< 0.00009
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	<0.00002	<0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0008	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.0002	<0.0002	0.001	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	0.0002
Strontium	mg/L	N/A	1.32	1.41	1.33	1.34	1.32	1.27	1.4	1.42	0.735	0.725	0.531	0.686	0.594	0.623	0.621	0.527	0.672	0.698
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00008
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0022	0.0012	< 0.0001	0.0006	0.0016	0.0006	< 0.0001	< 0.0001	< 0.0001	< 0.0004
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	37-93-II 5-May-20	37-93-II 13-Oct-20	37-93-II 4-May-21	37-93-II 13-Oct-21	37-93-II 3-May-22	37-93-II 25-Oct-22	37-93-II 2-May-23	37-93-II 18-Oct-23	37-93-II 6-May-24	37-93-II (Dup) 6-May-24	37-93-II 16-Oct-24	38-93 26-May-15	38-93 13-Oct-15	38-93 11-May-16	38-93 12-Oct-16	38-93 24-May-17	38-93 16-Oct-17	38-93 7-May-18
Alkalinity	mg/L	500	302	313	344	325	346	304	299	299	314	331	387	276	285	285	286	290	279	286
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.12	0.28	0.07	0.13	1.67	0.19	2.05	0.29	0.16	0.13	0.32	0.1	0.07	0.06	0.09	0.07	0.09	0.08
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	154	160	129	143	176	180	166	126	172	174	161	118	111	95.6	117	98.6	115	106
COD	mg/L	N/A	128	51	26	18	29	33	62	23	114	171	309	8	47	77	< 5	16	< 5	< 5
Chloride	mg/L	250	210	**316**	186	**299**	**271**	**482**	**329**	242	**306**	**296**	231	10.4	11.1	11.4	10.4	11	12.9	13
Conductivity	umhos/cm	N/A	1340	1620	1230	1530	1620	1890	1660	1400	1650	1650	1520	630	635	633	650	652	633	614
Cyanide	mg/L	0.2																		
DOC	mg/L	5	2	1.4	3.1	1.3	1.5	< 0.2	1.1	2.7	2.6	2.1	3.2	1.9	2.1	1.4	2	1.9	1.7	2.4
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.2	0.2	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	482	492	373	429	**537**	**559**	**517**	375	**528**	**533**	479	367	355	302	364	308	359	334
Ion Balance	%	N/A	3.65	1.52	0.224	2.4	1.27	8.26	2.83	1.91	1.18	0.557	2.29							
Iron	mg/L	0.3	**1.01**	**1.44**	**0.335**	**0.368**	**0.98**	**1.83**	**1.78**	0.092	**1.89**	**1.9**	**1.94**	0.249	**0.415**	0.006	**0.35**	**5.53**	**0.372**	0.089
Magnesium	mg/L	N/A	23.5	22.4	12.3	17.5	23.6	26.5	24.6	14.7	23.9	23.9	18.7	17.7	19	15.4	17.4	15.1	17.5	16.8
Manganese	mg/L	0.05	0.047	**0.055**	**0.075**	**0.057**	**0.119**	**0.069**	**0.097**	0.022	**0.135**	**0.137**	**0.162**	**0.06**	0.033	0.03	**0.057**	**0.226**	0.047	**0.054**
Nitrate	mg/L	10	0.12	< 0.05	0.26	< 0.05	< 0.05	< 0.5	< 0.05	0.08	<0.05	<0.05	<0.05	0.1	0.1	< 0.1	0.1	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	0.12	< 0.05	< 0.05	0.17	< 0.05	< 0.5	< 0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.7	0.6	0.7	0.6	2.3	0.8	2.2	1	<1.0	1.3	1.6	0.5	0.2	0.5	0.7	0.6	0.3	0.5
pH-Lab	pH unit	6.5-8.5	7.75	7.66	8	7.8	7.71	7.59	7.83	7.55	7.67	7.66	7.89	7.82	7.82	7.77	7.9	7.82	8.04	7.9
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.002	0.002	0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1
Potassium	mg/L	N/A	1.9	2.6	1.5	2.5	1.9	2.8	2.2	2.1	2	2.1	2.6	0.9	1	0.7	0.9	0.8	1	1.2
Sodium	mg/L	200	102	159	117	153	114	145	118	132	121	120	140	9.1	8.6	8.1	9.5	7.9	8.4	9.5
Sulphate	mg/L	500	57	58	20	54	45	56	59	51	49	43	43	43	39	42	38	32	34	39
TDS	mg/L	500	**731**	**908**	**672**	**865**	**843**	**1077**	**881**	**758**	**902**	**904**	**831**	365	362	344	366	345	356	357
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.08	0.08	0.07	0.06	0.09	**0.12**	0.05	0.04	0.07	0.06	0.05	0.03	0.02	0.02	0.04	**0.79**	0.06	0.07
Antimony	mg/L	0.006	0.0001	< 0.0001	0.0002	0.0001	< 0.0001	< 0.0001	0.0002	0.0004	<0.0001	<0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	0.0002	< 0.0001
Arsenic	mg/L	0.025	0.0002	0.0004	0.0003	0.0003	0.0004	0.0005	0.0003	0.0002	0.0004	0.0004	0.0007	0.0002	0.0004	0.0002	0.0005	0.0023	0.0003	0.0001
Barium	mg/L	1	0.308	0.386	0.157	0.315	0.322	0.442	0.356	0.255	0.365	0.368	0.258	0.142	0.145	0.111	0.147	0.154	0.159	0.132
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.031	0.048	0.03	0.048	0.029	0.027	0.03	0.035	0.031	0.031	0.053	0.009	0.024	< 0.005	0.028	0.022	0.03	0.023
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000014	< 0.000012	<0.000015	<0.000015	<0.000015	<0.000015	0.00002	< 0.00002	< 0.00002	< 0.00002	0.000022	< 0.000014	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	0.0034	< 0.0002	0.0017	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0001	0.0006	0.0006	0.0008	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001
Copper	mg/L	1	0.0007	0.0017	0.0007	0.0004	0.0004	0.0007	0.0001	0.0012	0.0002	0.0002	0.0004	0.0003	0.0002	0.0002	0.0002	0.0031	0.0002	0.0009
Lead	mg/L	0.01	< 0.00002	0.00017	< 0.00004	0.00006	< 0.00004	0.0003	< 0.00004	<0.00004	0.00005	0.00004	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.0041	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0006	0.0002	0.0001	0.0002	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0007	0.0007	0.0007	0.0008	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.1	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001
Strontium	mg/L	N/A	0.644	0.698	0.441	0.583	0.684	0.784	0.703	0.477	0.714	0.71	0.585	0.45	0.449	0.353	0.434	0.604	0.388	0.408
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00006	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	0.0002	0.0001	0.0001	<0.0001	0.0017	0.0011	< 0.0001	0.0007	0.0041	0.0006	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.008	< 0.005	0.011

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry
Summary - General Water Quality

Parameters	Units	ODWQS	38-93 10-Oct-18	38-93 10-May-19	38-93 7-Oct-19	38-93 5-May-20	38-93 13-Oct-20	38-93 4-May-21	38-93 13-Oct-21	38-93 3-May-22	38-93 25-Oct-22	38-93 2-May-23	38-93 18-Oct-23	38-93 6-May-24	38-93 16-Oct-24	39-93-I 26-May-15	39-93-I 13-Oct-15	39-93-I 11-May-16	39-93-I 12-Oct-16	39-93-I 24-May-17
Alkalinity	mg/L	500	280	272	284	286	272	286	304	282	297	302	320	300	301	255	244	262	231	254
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.12	0.08	0.08	< 0.01	0.17	0.06	0.09	0.59	0.34	11.4	0.46	0.06	0.65	0.22	0.2	0.2	0.31	0.24
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	113	112	118	107	104	101	110	111	92	101	98.7	108	111	88.6	84.4	77	86.4	74.6
COD	mg/L	N/A	32	6	12	9	39	13	8	12	< 5	< 5	8	24	18	< 5	< 5	< 5	< 5	< 5
Chloride	mg/L	250	11.9	14.7	11.7	12.9	12.7	12.2	12.8	12.6	18	15	12.3	13	11.5	90.6	88.2	95.3	123	75
Conductivity	umhos/cm	N/A	646	641	640	641	628	625	640	651	651	667	669	671	661	828	787	842	885	828
Cyanide	mg/L	0.2																		
DOC	mg/L	5	3.1	3.1	3.1	3.2	2.7	3.4	1.8	2.3	1.5	2.5	4.1	3.7	3.2	0.7	0.9	0.8	0.9	1.4
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.2	0.2	0.2	0.3	0.4
Hardness	mg/L	500	350	349	369	335	328	322	344	345	299	321	314	339	348	411	411	360	429	354
Ion Balance	%	N/A				2.07	2.54	0.039	0.82	3.92	7.22	3.3	5.29	0.791	2.83					
Iron	mg/L	0.3	**0.687**	0.125	**0.513**	0.011	**0.367**	0.008	**0.309**	0.012	0.115	0.045	0.249	0.061	**0.566**	**0.914**	**1.13**	**0.923**	**0.952**	**0.919**
Magnesium	mg/L	N/A	16.5	16.8	18	16.5	16.5	16.8	16.7	16.5	16.9	16.9	16.4	17.1	17.2	46.1	48.6	40.7	51.7	40.7
Manganese	mg/L	0.05	0.05	**0.051**	0.049	0.005	0.039	0.014	**0.058**	0.016	0.018	0.036	0.026	**0.096**	0.049	0.017	0.015	0.014	0.016	0.013
Nitrate	mg/L	10	< 0.05	0.2	< 0.05	0.11	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.16	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05
Tot Kjel N	mg/L	N/A	0.4	0.2	0.5	0.2	0.4	0.4	0.4	0.8	0.5	10.8	0.7	0.1	0.7	0.4	< 0.1	0.4	0.5	0.3
pH-Lab	pH unit	6.5-8.5	7.76	7.99	7.93	7.84	7.84	8.02	7.9	7.87	7.79	7.93	7.54	7.79	7.96	7.99	7.89	7.82	7.91	7.91
Phenols	mg/L	N/A	0.003	< 0.002	< 0.002	0.003	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.001	0.001
Phosphorus	mg/L	N/A	< 0.1	0.38	1.22	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.04	0.08	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	1	0.9	1.1	0.9	0.9	0.9	1.1	0.9	1	1	1.1	1	1.2	2.5	2.5	2.1	2.6	2.1
Sodium	mg/L	200	8.8	8.6	9	8.1	6.9	9	9.1	8	8.2	8.3	8.2	8.2	7.8	0.49	0.473	21.6	21	20.3
Sulphate	mg/L	500	37	43	37	34	37	38	37	37	45	39	33	33	30	39	36	41	35	31
TDS	mg/L	500	357	360	366	351	341	350	369	356	360	362	347	348	343	444	430	436	460	398
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.06	0.07	0.08	0.06	0.06	0.07	0.05	0.07	0.07	0.03	0.04	0.05	0.04	0.03	0.02	0.02	0.02	0.02
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001
Arsenic	mg/L	0.025	0.0003	0.0001	0.0003	< 0.0001	0.0002	< 0.0001	0.0002	0.0001	0.0001	< 0.0001	0.0001	<0.0001	0.0003	0.0003	0.0003	0.0002	0.0004	0.0004
Barium	mg/L	1	0.148	0.134	0.154	0.126	0.138	0.12	0.151	0.134	0.135	0.134	0.132	0.164	0.15	0.241	0.223	0.209	0.219	0.2
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.026	0.018	0.031	0.023	0.031	0.022	0.029	0.021	0.017	0.025	0.028	0.022	0.029	0.059	0.081	0.029	0.082	0.067
Cadmium	mg/L	0.005	< 0.00002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014
Chromium	mg/L	0.05	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.0002	0.0028	< 0.0002	0.0012	< 0.001
Cobalt	mg/L	N/A	0.007	0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	0.0003	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0004	0.0006	0.0001	0.0005	0.0016	0.0006	0.0004	0.0007	0.0006	0.0004	0.0006	0.0006	0.0006	< 0.0001	0.0001	< 0.0001	0.0003	0.0012
Lead	mg/L	0.01	0.00002	0.00002	< 0.00002	< 0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002	0.00006	< 0.00002	<0.00002	0.00003	<0.00002	0.00004	< 0.00002	< 0.00002	< 0.00002	0.00005
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.02	< 0.02	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	< 0.0001	0.0002	0.0002	< 0.0001	0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0002	0.0002	0.0008	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.427	0.454	0.465	0.414	0.422	0.407	0.454	0.425	0.431	0.426	0.423	0.454	0.446	1.29	1.25	1	1.47	1.19
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0015	0.001	< 0.0001	0.0004	0.0009
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	39-93-I 16-Oct-17	39-93-I 7-May-18	39-93-I 10-Oct-18	39-93-I 10-May-19	39-93-I 7-Oct-19	39-93-I 5-May-20	39-93-I 13-Oct-20	39-93-I 4-May-21	39-93-I 13-Oct-21	39-93-I 3-May-22	39-93-I 25-Oct-22	39-93-I 2-May-23	39-93-I 18-Oct-23	39-93-I 6-May-24	39-93-I 16-Oct-24	39-93-II 26-May-15	39-93-II 13-Oct-15	39-93-II 11-May-16
Alkalinity	mg/L	500	247	251	243	239	237	242	235	262	261	243	247	255	268	256	246	379	379	303
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.23	0.27	0.23	0.24	0.27	0.22	0.25	0.22	0.26	0.38	0.27	0.95	0.43	0.77	0.59	0.08	0.12	0.05
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	86.6	81.1	84.7	84.4	91.9	82.9	79.9	84.9	86.8	89	84.3	85.4	86.2	94.3	97.7	208	196	151
COD	mg/L	N/A	< 5	< 5	9	9	< 5	7	5	10	< 5	5	< 5	< 5	7	9	8	16	82	46
Chloride	mg/L	250	87	96.8	112	107	141	101	108	115	122	129	176	153	139	157	148	235	212	**318**
Conductivity	umhos/cm	N/A	818	788	887	828	917	844	852	891	910	947	945	983	986	1050	998	1500	1420	1590
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.3	1.6	1.9	2.5	1.8	1.7	1.5	1.3	1	1.3	< 0.2	1.2	2.2	2.9	2.5	1.1	1	0.8
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.1	0.1	0.2
Hardness	mg/L	500	413	390	400	396	443	395	374	409	411	416	412	410	414	444	463	**587**	**559**	430
Ion Balance	%	N/A						3.34	0.8	0.55	0.0891	1.63	7.09	4.07	1.96	0.312	4.51			
Iron	mg/L	0.3	**1.06**	**0.936**	**1.2**	**1.04**	**1.2**	**1.01**	**1.1**	**1.23**	**1.21**	**1.26**	**1.1**	**1.14**	**1.29**	**1.48**	**1.22**	0.009	**1.06**	< 0.005
Magnesium	mg/L	N/A	47.8	45.6	45.7	44.9	52	45.7	42.4	47.8	47.1	47.2	48.9	48	48.3	50.5	53.3	15.9	16.9	12.6
Manganese	mg/L	0.05	0.016	0.013	0.016	0.014	0.016	0.014	0.015	0.016	0.02	0.016	0.016	0.019	0.017	0.02	0.019	0.018	0.035	0.004
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05	0.18	< 0.05	0.09	< 0.05	0.21	< 0.05	< 0.05	< 0.05	< 0.05	0.07	<0.05	<0.05	0.1	< 0.1	0.1
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	< 0.05	< 0.05	0.11	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1
Tot Kjel N	mg/L	N/A	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.6	0.8	0.6	0.7	0.6	0.9	0.1	0.5
pH-Lab	pH unit	6.5-8.5	8.03	7.96	7.81	8.02	7.97	7.87	7.94	8.2	7.9	7.88	7.79	7.94	7.56	7.81	7.96	7.73	7.59	7.7
Phenols	mg/L	N/A	0.003	< 0.001	0.002	< 0.002	< 0.002	0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	0.07	0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.6	2.8	2.7	2.7	2.9	2.6	2.4	2.6	2.8	2.7	2.8	3	2.9	3	3	7.1	7.7	5.4
Sodium	mg/L	200	22.1	22.5	25.1	24.4	24.4	23	19.3	26.2	26.7	26.8	26.6	28	28.4	31.2	30.3	93.5	94	109
Sulphate	mg/L	500	34	38	42	43	41	36	40	41	42	40	52	46	38	39	35	22	27	22
TDS	mg/L	500	430	438	459	452	497	438	434	476	485	483	**541**	**517**	**526**	**560**	**532**	**810**	**782**	**801**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.06	0.05	0.04	0.05	0.06	0.05	0.05	0.05	0.03	0.06	0.06	0.03	0.03	0.03	0.03	0.05	0.04	0.03
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0004	0.0005	0.0002
Barium	mg/L	1	0.255	0.232	0.223	0.236	0.235	0.222	0.211	0.234	0.253	0.247	0.255	0.256	0.239	0.317	0.261	0.128	0.151	0.099
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.08	0.073	0.071	0.067	0.08	0.074	0.071	0.068	0.075	0.069	0.064	0.072	0.075	0.071	0.074	0.031	0.063	< 0.005
Cadmium	mg/L	0.005	< 0.000014	< 0.000015	< 0.00002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.0002	0.0046	< 0.0002
Cobalt	mg/L	N/A	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	0.0003	0.0003	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0001	0.0002	0.0004	0.0004	0.0002	0.0005	0.0017	0.0006	0.0002	0.0005	0.0002	0.0004	0.0002	0.0001	0.0006	0.0004	0.0008	0.0007
Lead	mg/L	0.01	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	0.00013	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	<0.00002	<0.00002	< 0.00002	0.00008	< 0.00002
Molybdenum	mg/L	N/A	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	< 0.0001	0.0002	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.0002	<0.0002	0.0007	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	1.18	1.24	1.33	1.37	1.55	1.31	1.26	1.32	1.41	1.37	1.43	1.42	1.42	1.51	1.48	0.575	0.543	0.416
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.003	0.0017	0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	39-93-II 24-May-17	39-93-II 16-Oct-17	39-93-II 7-May-18	39-93-II 10-Oct-18	39-93-II 10-May-19	39-93-II 5-May-20	39-93-II 13-Oct-20	39-93-II 4-May-21	39-93-II 13-Oct-21	39-93-II 3-May-22	39-93-II 25-Oct-22	39-93-II 2-May-23	39-93-II 18-Oct-23	39-93-II 6-May-24	39-93-II 16-Oct-24	43-93-I 26-May-15	43-93-I 13-Oct-15	43-93-I 16-May-16
Alkalinity	mg/L	500	354	299	364	241	320	297	289	304	370	321	380	289	399	350	454	236	228	226
Unionized Ammonia	mg/L	N/A																		< 0.01
Ammonia	mg/L	N/A	0.03	0.04	0.03	0.09	0.06	0.01	0.04	0.07	0.04	0.69	0.03	1.53	0.31	0.19	0.79	0.23	0.19	0.31
BOD	mg/L	N/A																5	2	2
Calcium	mg/L	N/A	128	146	166	191	133	113	216	127	161	137	167	99.8	153	108	182	92.3	88.1	83.4
COD	mg/L	N/A	14	13	9	13	36	20	35	14	11	19	17	19	13	49	49	38	< 5	6
Chloride	mg/L	250	208	**259**	**337**	**489**	241	193	**542**	**255**	**404**	246	**524**	212	**438**	182	**273**	57.9	46.2	53
Conductivity	umhos/cm	N/A	1470	1460	1530	2090	1320	1220	2220	1410	1760	1390	2040	1190	1860	1280	1790	686	664	689
Cyanide	mg/L	0.2																< 0.005	< 0.005	< 0.005
DOC	mg/L	5	2.5	1.7	2.1	1.6	4	2.3	1.1	2.2	1.7	2	< 0.2	2.2	2.7	4.3	4.1	0.8	2.8	1.3
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	<0.1	<0.1	<0.1	0.2	0.2	0.2
Hardness	mg/L	500	358	411	468	**534**	373	316	**608**	358	451	383	476	280	430	304	**509**	370	376	347
Ion Balance	%	N/A						3.1	3.4	0.874	4.05	1.34	9.33	5.14	7.08	1.34	2.99			
Iron	mg/L	0.3	< 0.005	0.006	0.007	0.014	0.025	0.02	< 0.005	**0.339**	0.025	0.176	< 0.005	0.079	0.013	0.051	0.278	0.172	0.248	0.18
Magnesium	mg/L	N/A	9.37	11.2	13	13.7	9.9	8.19	16.5	9.93	11.7	9.78	14.2	7.51	11.6	8.31	13.4	33.9	37.9	33.8
Manganese	mg/L	0.05	0.005	< 0.001	0.007	0.001	0.031	0.011	< 0.001	0.047	0.005	**0.057**	< 0.001	0.026	0.007	0.024	0.034	0.008	0.008	0.008
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05	< 0.05	0.2	0.11	< 0.05	0.46	< 0.05	< 0.05	< 0.5	< 0.05	0.09	<0.05	<0.05	0.3	0.1	0.1
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	0.06	< 0.05	0.14	0.16	< 0.05	< 0.05	< 0.05	< 0.5	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	0.2
Tot Kjel N	mg/L	N/A	0.5	0.5	0.7	0.4	0.7	0.6	0.6	0.8	0.5	1.4	0.7	1.9	0.9	0.7	1	0.7	0.4	0.5
pH-Lab	pH unit	6.5-8.5	7.85	7.94	7.87	7.76	7.98	7.88	7.77	8.06	7.83	7.79	7.64	7.92	7.59	7.78	7.82	8.04	7.83	8.06
Phenols	mg/L	N/A	0.003	0.002	< 0.001	0.016	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	0.38	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	5.6	8.3	6.8	8	5.6	5	6.6	5.2	7	4.8	4.9	4.6	5.7	4.9	6.7	2.7	2.8	2.6
Sodium	mg/L	200	164	150	166	**217**	156	140	193	151	**202**	142	**227**	121	200	138	184	11.5	10.6	11
Sulphate	mg/L	500	11	28	16	33	16	18	52	16	34	13	56	19	45	19	26	49	51	49
TDS	mg/L	500	**739**	**782**	**924**	**1097**	**753**	**656**	**1199**	**747**	**1041**	**747**	**1220**	**638**	**1020**	**693**	**983**	391	374	370
TSS	mg/L	N/A																6700	222	455
Turbidity	NTU	N/A																1040	253	701
Colour	TCU	5																< 2	< 2	< 2
Aluminum	mg/L	0.1	0.04	0.08	0.07	0.09	0.08	0.07	0.1	0.08	0.07	0.08	0.1	0.06	0.04	0.04	0.06	0.02	0.02	0.02
Antimony	mg/L	0.006	0.0002	0.0001	< 0.0002	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002	0.0001	0.0003	0.0001	0.0002	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0012	0.0008	< 0.0005	0.0001	0.0002	0.0001	< 0.0003	0.0001	0.0001	0.0002	< 0.0003	0.0001	<0.0001	0.0002	0.0003	0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	0.096	0.14	0.131	0.186	0.099	0.079	0.208	0.085	0.145	0.094	0.191	0.073	0.158	0.098	0.145	0.057	0.061	0.055
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.033	0.053	0.03	0.043	0.026	0.026	0.047	0.026	0.049	0.027	0.039	0.028	0.048	0.028	0.049	0.036	0.062	0.026
Cadmium	mg/L	0.005	< 0.000014	< 0.000014	< 0.000059	< 0.00002	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000029	< 0.000012	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	<0.001	<0.001	<0.001	< 0.0002	0.0026	< 0.0002
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.0001	< 0.005	0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	0.0003	0.0005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0026	0.0017	0.0012	0.0014	0.0018	0.0006	0.0019	0.0007	0.0011	0.0005	0.0009	0.0009	0.0008	0.0004	0.0004	< 0.0001	0.0001	< 0.0001
Lead	mg/L	0.01	0.00008	0.00003	< 0.0002	0.0001	0.00005	0.00004	< 0.00009	< 0.00004	0.0001	< 0.00004	< 0.00009	0.00015	<0.00004	0.00003	0.00005	0.00004	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0002	< 0.0004	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0001	< 0.0002	0.0002	0.0002	0.0001	0.0001	< 0.0001	< 0.0001	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0003	0.0004	0.0004	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.003	0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.372	0.371	0.469	0.529	0.391	0.311	0.616	0.382	0.495	0.384	0.545	0.296	0.466	0.337	0.513	1.01	0.962	0.881
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0019	0.0014	< 0.0007	0.0005	0.0002	0.0002	< 0.0004	< 0.0001	0.0003	0.0001	0.0006	0.0003	0.0008	0.0002	0.0001	0.0015	0.0009	0.0004
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	0.022	<0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	43-93-I 12-Oct-16	43-93-I 24-May-17	43-93-I 17-Oct-17	43-93-I 8-May-18	43-93-I 11-Oct-18	43-93-I 8-May-19	43-93-I 9-Oct-19	43-93-I 5-May-20	43-93-I 13-Jul-20	43-93-I 13-Oct-20	43-93-I 4-May-21	43-93-I 5-Jul-21	43-93-I 13-Oct-21	43-93-I 3-May-22	43-93-I 26-Jul-22	43-93-I 25-Oct-22	43-93-I 2-May-23	43-93-I 12-Jul-23
Alkalinity	mg/L	500	215	233	234	226	243	217	229	228	239	237	228	244	229	237	250	251	246	260
Unionized Ammonia	mg/L	N/A	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ammonia	mg/L	N/A	0.23	0.21	0.21	0.16	0.21	0.27	0.21	0.2	0.2	0.23	0.19	0.24	0.23	0.82	1.77	0.3	0.31	0.23
BOD	mg/L	N/A	< 3	< 3	< 3	< 3	2	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
Calcium	mg/L	N/A	74	81.3	85.5	85.8	79.7	83.6	89.8	85.8	90.2	86.9	79.8	87.2	90.5	91.8	95.5	97.4	95.9	97.4
COD	mg/L	N/A	< 5	7	5	48	< 5	10	< 5	< 5	15	< 5	< 5	16	5	10	< 5	12	5	8
Chloride	mg/L	250	47.9	46.5	46	60.5	52.6	57.4	56.2	54.6	57.3	58.8	59.8	67.5	74.3	70.5	70.6	76.3	82.6	87.3
Conductivity	umhos/cm	N/A	640	704	687	680	697	684	690	694	693	724	714	722	746	756	741	796	798	830
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	1.4	1.6	1.4	1.7	1.7	2.1	2	2.1	**8.8**	1.2	1.9	4.6	1.3	1.3	1.1	< 0.2	0.8	< 0.2
Fluoride	mg/L	1.5	0.2	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	305	334	360	357	336	348	375	363	376	381	340	363	380	384	398	417	404	394
Ion Balance	%	N/A								3.78	3.33	4.2	0.287	0.895	1.46	2.02	3.18	3.38	1.07	2.7
Iron	mg/L	0.3	0.147	0.146	0.193	0.045	0.219	0.127	0.279	0.165	0.224	0.259	0.182	0.246	**0.31**	0.252	**0.311**	**0.38**	**0.301**	**0.339**
Magnesium	mg/L	N/A	29.1	31.9	35.5	34.6	33.3	33.7	36.6	36.1	36.6	39.8	34.3	35.4	37.4	37.6	38.8	42.2	40	36.5
Manganese	mg/L	0.05	0.008	0.008	0.008	0.01	0.0071	0.007	0.008	0.008	0.009	0.007	0.01	0.008	0.01	0.008	0.009	0.01	0.014	0.009
Nitrate	mg/L	10	0.2	< 0.05	0.08	0.15	< 0.05	< 0.05	< 0.05	0.14	0.12	< 0.05	0.14	0.12	< 0.05	0.07	0.07	< 0.05	< 0.05	0.08
Nitrite	mg/L	1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	0.06	< 0.05	0.11	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.5	0.3	0.3	0.4	0.3	0.3	0.4	0.4	0.6	0.4	0.4	0.5	0.4	1.1	2.2	0.4	0.7	0.4
pH-Lab	pH unit	6.5-8.5	8.02	8.02	7.85	7.93	7.91	7.8	7.9	8.02	7.81	7.92	7.97	7.79	7.72	7.46	7.8	7.81	7.78	7.77
Phenols	mg/L	N/A	0.005	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.16	0.12	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.4	2.4	2.9	3	2.8	2.8	3	2.9	3	3.3	2.6	2.8	3.1	3	2.9	3.4	3.2	3.1
Sodium	mg/L	200	9.5	10.5	10.1	11.5	10	9.9	9.8	9.7	9.9	10.2	9.4	9.6	10	9.5	10	10.3	10	9.9
Sulphate	mg/L	500	49	41	41	47	48	47	53	53	53	53	52	54	59	56	52	56	57	58
TDS	mg/L	500	343	354	361	378	373	366	387	379	394	394	375	404	413	412	422	437	436	449
TSS	mg/L	N/A	750	198	670	650	118	215	116	404	2400	176	196	900	530	184	296	252	350	590
Turbidity	NTU	N/A	492	225	620	715	222	411	168	342	1240	177	113	934	159	183	128	214	234	222
Colour	TCU	5	**16**	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	2	< 2	< 2	< 2	< 2
Aluminum	mg/L	0.1	0.05	0.02	0.04	0.05	0.05	0.05	0.07	0.05	0.05	0.03	0.05	0.06	0.05	0.02	0.06	0.07	0.03	0.06
Antimony	mg/L	0.006	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0002	0.0003	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	0.049	0.053	0.063	0.057	0.057	0.053	0.062	0.058	0.062	0.063	0.054	0.06	0.064	0.066	0.066	0.074	0.068	0.073
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.048	0.049	0.061	0.057	0.054	0.054	0.062	0.057	0.058	0.068	0.055	0.059	0.063	0.062	0.056	< 0.005	0.062	0.056
Cadmium	mg/L	0.005	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	< 0.000010
Chromium	mg/L	0.05	0.0007	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.0001	< 0.005	< 0.005	< 0.0001	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	< 0.0001	0.001	0.0002	0.0001	0.0003	0.0004	< 0.0001	< 0.0001	0.0008	0.0015	0.0012	0.0002	0.0004	0.0005	0.0025	0.0017	0.0002	0.0002
Lead	mg/L	0.01	< 0.00002	0.00003	< 0.00002	< 0.00002	0.00003	0.00003	0.00003	0.00004	0.00008	0.00007	0.00006	0.00004	0.0001	0.00003	0.00006	0.00009	0.00003	0.00003
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.835	0.86	0.831	0.959	0.929	0.879	0.99	0.994	0.99	1.12	0.931	0.976	1.05	1.01	1.07	1.14	1.1	1.1
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0003	0.0009	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	43-93-I 18-Oct-23	43-93-I 6-May-24	43-93-I (Dup) 6-May-24	43-93-I 29-Jul-24	43-93-I 16-Oct-24	43-93-II 26-May-15	43-93-II 13-Oct-15	43-93-II 16-May-16	43-93-II 24-May-17	43-93-II 17-Oct-17	43-93-II 8-May-18	43-93-II 11-Oct-18	43-93-II 8-May-19	43-93-II 9-Oct-19	43-93-II 5-May-20	43-93-II 13-Jul-20	43-93-II 13-Oct-20	43-93-II 4-May-21
Alkalinity	mg/L	500	273	259	258	266	267	265	279	264	238	265	259	271	241	269	241	250	252	240
Unionized Ammonia	mg/L	N/A	<0.01	<0.01	<0.01	<0.01	<0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ammonia	mg/L	N/A	0.34	0.26	0.21	0.58	0.69	0.02	< 0.01	0.04	0.02	0.04	0.03	0.02	0.05	0.02	0.01	0.03	0.02	< 0.01
BOD	mg/L	N/A		<3	<3	<3	<3	< 2	< 2	< 2	< 3	< 3	< 3	< 2	< 3	< 3	< 3	< 3	< 3	< 3
Calcium	mg/L	N/A	90.5	90.7	92.4	104	104	133	142	122	110	123	114	110	109	121	101	115	107	110
COD	mg/L	N/A	16	29	32	10	22	12	< 5	13	7	9	9	< 5	< 5	< 5	9	6	< 5	5
Chloride	mg/L	250	95.6	81.9	82.2	88.4	89.1	54.2	58.8	45.5	31.9	33.8	31.5	28.3	20.9	22.4	22.8	28.2	24.8	54.9
Conductivity	umhos/cm	N/A	830	838	833	853	863	697	747	671	601	643	587	620	569	624	537	555	587	679
Cyanide	mg/L	0.2		<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	2.4	3	2.4	1.3	1.4	0.9	1.2	1.4	1.9	1.7	1.6	2.3	2.3	2.7	2.4	4.4	1.7	2.3
Fluoride	mg/L	1.5	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	383	388	392	445	437	371	410	341	307	339	321	309	306	344	280	322	299	306
Ion Balance	%	N/A	7.05	1.13	0.9	3.57	2.08										2.48	5.85	3.29	1.54
Iron	mg/L	0.3	**0.556**	**0.37**	**0.363**	**0.359**	**0.504**	< 0.005	0.019	< 0.005	< 0.005	0.025	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	0.007
Magnesium	mg/L	N/A	38.2	39.3	39.1	45.2	43	9.13	13.4	8.86	7.9	7.78	8.64	8.32	8.19	10.2	6.63	8.35	7.48	7.57
Manganese	mg/L	0.05	0.01	0.011	0.011	0.01	0.01	0.002	< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.0002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Nitrate	mg/L	10	0.08	0.11	0.16	<0.05	0.05	0.2	0.1	0.1	0.15	0.14	0.1	0.12	0.07	< 0.05	0.16	0.13	0.13	0.13
Nitrite	mg/L	1	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.5	0.5	<0.1	0.7	0.7	0.1	0.2	0.2	< 0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2	0.2
pH-Lab	pH unit	6.5-8.5	7.47	7.8	7.94	7.93	7.93	7.9	7.65	7.95	7.96	7.83	7.96	7.82	7.81	7.88	7.91	7.82	7.92	7.96
Phenols	mg/L	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	<0.1	<0.1	<0.1	<0.1	<0.1	0.18	0.09	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.14	0.13	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.9	3.3	3.2	3.3	3.2	0.5	0.9	0.4	0.5	0.8	0.5	0.6	0.5	0.8	0.5	0.6	0.8	0.4
Sodium	mg/L	200	8.9	10.1	10	11.1	10.2	10.1	10.6	10	11.5	11.4	9.6	9.9	9.4	11	9.3	10.1	11.1	10.2
Sulphate	mg/L	500	60	50	50	52	54	16	25	15	15	14	16	18	15	25	12	15	15	20
TDS	mg/L	500	437	442	439	450	456	383	419	361	319	350	335	338	308	351	297	328	318	347
TSS	mg/L	N/A	236	726	926	76	334	470	208	300	342	146	300	670	245	410	160	820	532	230
Turbidity	NTU	N/A	382	348	654	124	187	372	272	315	669	156	141	635	356	171	206	950	250	116
Colour	TCU	5	<2	<2	<2	<2	<2	2	< 2	2	< 2	5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Aluminum	mg/L	0.1	0.06	0.06	0.07	0.04	0.06	0.03	0.03	0.03	0.03	0.06	0.06	0.06	0.06	0.08	0.06	0.06	0.04	0.08
Antimony	mg/L	0.006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0001	< 0.0001	0.0004	0.0003	0.0001	0.0001	< 0.0001	0.0001	0.0001	0.0001	0.0001	0.0002
Barium	mg/L	1	0.067	0.066	0.067	0.075	0.074	0.075	0.105	0.067	0.075	0.116	0.075	0.082	0.068	0.095	0.076	0.084	0.09	0.074
Beryllium	mg/L	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.056	0.064	0.062	0.067	0.068	< 0.005	0.008	< 0.005	< 0.005	0.006	0.005	0.006	0.006	0.008	< 0.005	0.008	0.009	0.006
Cadmium	mg/L	0.005	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	0.0035	< 0.0002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.0001	0.0002	0.0002	<0.0001	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.0001	0.013	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0003	0.0003	<0.0001	0.0002	0.0003	0.0003	0.0007	0.0002	0.0015	0.0003	0.0002	0.0002	0.0008	0.0002	0.0002	0.0014	0.0004	0.0015
Lead	mg/L	0.01	0.00002	0.0001	0.00008	0.00003	0.00005	< 0.00002	< 0.00002	< 0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00002	0.00003	0.00005	< 0.00002	0.00011
Mercury	mg/L	0.001	<0.00002	0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0003	0.0002	0.0003	0.0005	0.0003	0.0003	0.0002	0.0004	0.0003	0.0003	0.0003	0.0002
Nickel	mg/L	N/A	0.0008	0.0008	0.0008	<0.0002	<0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.06	1.14	1.13	1.2	1.17	0.291	0.316	0.244	0.267	0.3	0.256	0.244	0.23	0.277	0.252	0.251	0.284	0.264
Thallium	mg/L	N/A	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0017	0.0013	0.0006	0.0009	0.0007	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0001	< 0.0001
Zinc	mg/L	5	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	43-93-II 5-Jul-21	43-93-II 13-Oct-21	43-93-II 3-May-22	43-93-II 26-Jul-22	43-93-II 25-Oct-22	43-93-II 2-May-23	43-93-II 12-Jul-23	43-93-II 18-Oct-23	43-93-II 6-May-24	43-93-II 29-Jul-24	43-93-II 16-Oct-24	44-93-I 26-May-15	44-93-I 13-Jul-15	44-93-I 13-Oct-15	44-93-I 17-May-16	44-93-I 13-Jul-16	44-93-I 12-Oct-16	44-93-I 24-May-17
Alkalinity	mg/L	500	264	256	283	328	336	460	490	**513**	**574**	**603**	479	252	254	263	254	252	247	258
Unionized Ammonia	mg/L	N/A		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.01	<0.01	<0.01				< 0.01	< 0.01	< 0.01	< 0.01
Ammonia	mg/L	N/A	0.01	0.01	0.51	0.14	0.03	2.36	0.22	0.14	<0.05	0.25	0.27	0.14	0.2	0.17	0.16	0.15	0.17	0.15
BOD	mg/L	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3		8	11	7	2		4	< 2	< 3	4	< 3
Calcium	mg/L	N/A	131	128	145	152	159	208	215	193	218	252	196	107	110	101	103	104	99.6	103
COD	mg/L	N/A	14	< 5	13	< 5	22	< 5	11	15	34	22	58	6	< 5	5	6	< 5	< 5	7
Chloride	mg/L	250	67	57.8	57.5	40.7	43.3	43.4	44.8	45.1	37	36.2	16.1	81.5	87.4	90.8	83.9	87.6	91.5	71.2
Conductivity	umhos/cm	N/A	708	698	795	765	832	1070	1110	1100	1240	1260	990	814	846	865	833	831	847	851
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	2.1	1.8	1.8	3	0.9	2.5	0.3	**5.8**	**6.9**	4.5	3	0.8	0.6	0.7	1.3	0.9	1.3	1.8
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	<0.1	<0.1	<0.1	<0.1	0.2	0.1	0.2	0.2	0.2	0.2	< 0.1
Hardness	mg/L	500	365	350	404	419	444	**581**	**593**	**538**	**616**	**710**	**535**	419	425	410	412	410	385	402
Ion Balance	%	N/A	1.6	1.5	2.66	2.86	3.56	3.16	1.5	5.26	1.06	4.32	3.47							
Iron	mg/L	0.3	0.01	0.006	< 0.005	0.011	0.006	< 0.005	< 0.005	<0.005	0.013	**0.407**	0.015	**0.588**	**0.49**	**0.733**	**0.521**	**0.546**	**0.455**	**0.527**
Magnesium	mg/L	N/A	9.08	7.32	9.9	9.51	11.2	15	13.4	13.4	17.5	19.4	10.9	36.8	36.8	38	37.3	36.4	33.1	35.4
Manganese	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	0.001	0.016	0.025	0.011	0.013	0.013	0.013	0.013	0.013	0.013	0.012
Nitrate	mg/L	10	0.19	0.1	0.07	0.11	< 0.05	< 0.05	< 0.5	0.07	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05
Tot Kjel N	mg/L	N/A	0.2	0.2	0.7	0.5	0.3	2.1	0.7	0.4	1.7	0.7	2.6	0.2	0.2	0.3	0.3	0.3	0.6	0.2
pH-Lab	pH unit	6.5-8.5	7.77	7.73	7.49	7.71	7.71	7.57	7.53	7.47	7.61	7.53	7.75	7.93	7.87	7.74	7.97	7.85	7.9	7.88
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.034	0.002	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	0.6	0.8	0.6	0.8	0.7	0.8	0.9	0.8	1	1.3	0.7	2.6	2.8	3	2.5	2.5	2.3	2.4
Sodium	mg/L	200	12.2	11.4	12.5	14	14.7	17.6	18.6	17.7	24.2	29.7	20.9	15	16.4	17.5	15.6	16.2	16.6	15.8
Sulphate	mg/L	500	19	25	45	38	45	58	60	62	55	57	40	52	55	56	54	55	57	45
TDS	mg/L	500	398	384	441	452	475	**618**	**647**	**593**	**672**	**679**	**528**	447	461	465	450	454	450	428
TSS	mg/L	N/A	166	368	93	93	288	120	350	130	334	231	285	92	64	190	70	85	960	320
Turbidity	NTU	N/A	353	182	76.5	124	271	115	188	174	142	127	149	40.6	43.9	147	83.5	112	947	326
Colour	TCU	5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	<2	<2	3	9	< 2	2	4	8	< 2
Aluminum	mg/L	0.1	0.09	0.05	0.04	0.08	0.09	0.06	0.09	**0.12**	0.07	0.08	0.08	0.03	0.03	0.02	0.03	0.02	0.04	0.03
Antimony	mg/L	0.006	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	0.0003	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001
Arsenic	mg/L	0.025	0.0001	0.0001	0.0001	0.0002	0.0001	< 0.0001	0.0001	0.0001	0.0002	0.0004	0.0002	0.0002	0.0002	0.0003	0.0001	< 0.0001	0.0002	0.0004
Barium	mg/L	1	0.09	0.101	0.091	0.109	0.116	0.134	0.162	0.146	0.156	0.19	0.138	0.186	0.187	0.182	0.188	0.183	0.166	0.172
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.009	0.009	< 0.005	< 0.005	< 0.005	0.009	0.009	0.006	0.011	0.016	0.008	0.038	0.048	0.054	0.055	0.027	0.046	0.05
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	<0.000015	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.0002	0.0027	0.0014	< 0.0002	0.0007	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0003	0.0006	0.0004	0.0004	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0012	0.0008	0.0007	0.0017	0.0017	0.0004	0.0004	0.0008	0.0003	0.0006	0.0006	< 0.0001	< 0.0001	0.0002	0.0002	< 0.0001	< 0.0001	0.0008
Lead	mg/L	0.01	0.00005	0.00004	0.00005	0.00005	0.00006	< 0.00004	< 0.00004	0.00003	0.00002	0.00005	0.00004	0.00006	< 0.00002	0.00008	0.00004	< 0.00002	0.00003	0.00007
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002	< 0.0001	0.0002	0.0002	0.0003	0.0002	0.0003
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0005	0.0006	0.001	0.0006	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	0.002	0.001	< 0.001	< 0.001	0.001	<0.001	<0.001	0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.273	0.336	0.292	0.356	0.355	0.432	0.449	0.43	0.51	0.541	0.461	1	0.994	0.915	0.959	0.87	0.886	0.884
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0001	< 0.0001	< 0.0001	0.0001	0.0001	< 0.0001	< 0.0001	0.0001	<0.0001	0.0002	0.0001	0.0014	0.0029	0.001	0.0005	0.0004	0.0003	0.0008
Zinc	mg/L	5	0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

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Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	44-93-I 19-Jul-17	44-93-I 17-Oct-17	44-93-I 8-May-18	44-93-I 24-Jul-18	44-93-I 11-Oct-18	44-93-I 8-May-19	44-93-I 15-Jul-19	44-93-I 9-Oct-19	44-93-I 5-May-20	44-93-I 13-Jul-20	44-93-I 13-Oct-20	44-93-I 4-May-21	44-93-I 5-Jul-21	44-93-I 13-Oct-21	44-93-I 3-May-22	44-93-I 26-Jul-22	44-93-I 25-Oct-22	44-93-I 2-May-23
Alkalinity	mg/L	500	249	254	244	235	261	233	238	246	240	418	250	242	260	234	242	256	247	246
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ammonia	mg/L	N/A	0.15	0.21	0.15	0.22	0.17	0.2	0.2	0.16	0.15	0.04	0.17	0.14	0.14	0.15	0.17	0.23	0.19	0.41
BOD	mg/L	N/A	6	< 3	< 3	2	7	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	4	< 3
Calcium	mg/L	N/A	103	109	104	93	103	102	106	116	102	238	107	96.2	106	105	106	107	109	106
COD	mg/L	N/A	8	< 5	14	< 5	6	6	< 5	< 5	< 5	27	8	< 5	9	8	< 5	< 5	9	< 5
Chloride	mg/L	250	69.7	78.8	88.5	87.6	91.4	88.7	90	101	90.7	**370**	98.3	92.7	102	107	97.6	98.8	102	112
Conductivity	umhos/cm	N/A	829	844	792	812	871	815	819	860	828	1860	865	838	854	844	864	833	879	879
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	1.4	1.6	1.7	1.5	2	2.2	4.6	2.1	1.8	4.4	1.4	1.5	1.7	1.1	1.3	0.9	< 0.2	0.6
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1
Hardness	mg/L	500	406	433	416	381	407	407	408	452	410	**656**	433	393	421	419	420	428	441	426
Ion Balance	%	N/A									2.78	1.76	3.41	0.0653	0.118	1.41	2.32	2.03	3.81	0.321
Iron	mg/L	0.3	**0.361**	**0.596**	0.058	**0.493**	**0.69**	**0.37**	**0.789**	**0.761**	**0.462**	< 0.005	**0.636**	**0.541**	**0.665**	**0.785**	**0.573**	**0.644**	**0.755**	**0.618**
Magnesium	mg/L	N/A	36.1	39	37.9	36.1	36.4	36.9	34.9	39.4	37.7	14.9	40.5	37	38	38	38	39.1	41.1	39.3
Manganese	mg/L	0.05	0.014	0.013	0.012	0.012	0.0122	0.012	0.013	0.014	0.013	0.001	0.012	0.013	0.013	0.014	0.012	0.013	0.014	0.013
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05	< 0.05	0.07	3.91	< 0.05	0.06	0.05	< 0.05	0.07	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	0.06	< 0.05	< 0.05	< 0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.3	0.3	0.2	0.4	0.4	0.3	0.2	0.3	0.4	0.5	0.4	0.3	0.3	0.4	0.3	0.6	0.4	0.5
pH-Lab	pH unit	6.5-8.5	7.87	7.82	7.93	7.87	7.83	7.76	7.66	7.87	7.94	7.59	7.86	7.98	7.81	7.67	7.46	7.76	7.77	7.78
Phenols	mg/L	N/A	0.004	0.003	< 0.001	0.004	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.12	0.11	0.23	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.6	2.8	2.9	2.8	2.7	2.7	2.6	3	2.8	1.3	3	2.5	2.7	2.8	2.8	2.8	3	3
Sodium	mg/L	200	15.4	15.6	15.1	14.8	16.6	14.2	15.3	17.8	14.9	166	17.9	14.1	15.9	15.3	14.6	15.3	16.9	15.4
Sulphate	mg/L	500	44	46	55	52	56	50	51	58	52	29	55	52	54	57	55	51	56	56
TDS	mg/L	500	421	445	450	428	463	435	444	484	446	**1070**	472	441	475	467	460	468	477	480
TSS	mg/L	N/A	170	310	140	540	1080	216	260	1070	456	1710	595	80	40	112	57	97	124	64
Turbidity	NTU	N/A	150	196	169	663	57.9	202	129	1020	233	812	563	138	84.3	93.7	97.8	85.7	249	67.4
Colour	TCU	5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Aluminum	mg/L	0.1	0.03	0.07	0.06	0.05	0.06	0.06	0.05	0.07	0.06	0.1	0.04	0.06	0.07	0.05	0.03	0.06	0.07	0.03
Antimony	mg/L	0.006	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0002	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	0.182	0.198	0.18	0.165	0.185	0.171	0.163	0.198	0.179	0.14	0.19	0.169	0.189	0.186	0.192	0.18	0.204	0.188
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.055	0.06	0.061	0.053	0.053	0.059	0.054	0.059	0.059	0.015	0.062	0.056	0.06	0.058	0.061	0.056	< 0.005	0.06
Cadmium	mg/L	0.005	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.0001	0.006	< 0.0001	< 0.005	0.0001	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.001	0.0002	0.0001	0.0015	0.0003	0.0003	0.0009	< 0.0001	< 0.0001	0.0013	0.0016	0.0031	0.0003	0.0009	0.0005	0.0005	0.0002	0.0002
Lead	mg/L	0.01	0.00008	0.00005	< 0.00002	0.0001	0.00008	0.00003	0.00018	0.00009	0.00005	0.00007	0.00009	0.0001	0.00005	0.00004	0.00003	0.00003	0.00003	0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.95	0.822	0.932	0.867	0.928	0.867	0.873	0.971	0.956	0.587	1.03	0.907	0.954	0.97	0.923	0.973	1.01	0.978
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0013	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	44-93-I 12-Jul-23	44-93-I 18-Oct-23	44-93-I 6-May-24	44-93-I 16-Oct-24	44-93-II 26-May-15	44-93-II 13-Oct-15	44-93-II 17-May-16	44-93-II 13-Jul-16	44-93-II 12-Oct-16	44-93-II 24-May-17	44-93-II 19-Jul-17	44-93-II 17-Oct-17	44-93-II 8-May-18	44-93-II 24-Jul-18	44-93-II 11-Oct-18	44-93-II 8-May-19	44-93-II 15-Jul-19	44-93-II 9-Oct-19
Alkalinity	mg/L	500	257	262	253	243	373	387	367	390	310	350	352	337	355	351	391	198	249	345
Unionized Ammonia	mg/L	N/A	< 0.01	0.01	<0.01	<0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01
Ammonia	mg/L	N/A	0.18	0.95	<0.05	0.68	0.03	0.05	0.03	0.1	0.03	0.04	0.03	0.15	0.05	0.22	0.06	0.11	0.08	0.03
BOD	mg/L	N/A	< 3		<3	<3	< 2	< 2	< 2	< 3	< 3	< 3	< 3	< 3	< 3	< 2	2		< 3	< 3
Calcium	mg/L	N/A	109	96.3	98.5	108	194	159	170	203	151	182	148	126	212	238	172	93.9	129	202
COD	mg/L	N/A	13	11	13	<5	< 5	< 5	31	< 5	41	< 5	7	8	15	61	10	19	18	8
Chloride	mg/L	250	112	125	109	113	182	164	181	219	162	155	175	43.4	**278**	**395**	119	64.1	141	**367**
Conductivity	umhos/cm	N/A	900	885	909	893	1300	1270	1330	1520	1220	1320	1340	815	1470	1860	1180	622	964	1560
Cyanide	mg/L	0.2	< 0.005		<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005		< 0.005	< 0.005
DOC	mg/L	5	< 0.2	2.4	2.7	1.3	0.7	0.7	1	0.6	1	1.5	1.5	3.1	1.6	1.7	3.2	3.1	2	1.9
Fluoride	mg/L	1.5	< 0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	417	386	403	429	**543**	450	**510**	**574**	440	**510**	458	366	**606**	**674**	485	272	384	**587**
Ion Balance	%	N/A	1.84	8.23	1.83	1.38														
Iron	mg/L	0.3	**0.997**	**0.814**	**0.618**	**0.636**	< 0.005	0.01	< 0.005	< 0.005	0.018	< 0.005	< 0.005	0.005	0.005	0.113	0.119	0.138	0.016	0.008
Magnesium	mg/L	N/A	35.1	35.3	38	38.8	13.7	13	20.7	16.3	15.3	13.5	21.6	12.4	18.4	19.2	13.4	9.04	15	19.9
Manganese	mg/L	0.05	0.014	0.012	0.013	0.013	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	0.012	**0.414**	0.013	0.039	0.0248	**0.36**	**0.194**	**0.176**
Nitrate	mg/L	10	0.09	<0.05	<0.05	<0.05	3	3.3	7.6	5.2	2.8	4.48	3.78	0.17	2.33	2.36	1.36	0.21	1.06	1.71
Nitrite	mg/L	1	< 0.05	<0.05	0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.6	0.5	0.3	0.7	0.4	0.5	0.5	0.5	0.8	0.3	0.4	0.5	0.5	0.6	0.8	0.6	0.8	0.8
pH-Lab	pH unit	6.5-8.5	7.72	7.55	7.86	7.96	7.68	7.52	7.7	7.56	7.64	7.78	7.58	7.67	7.74	7.63	7.69	7.99	7.6	7.78
Phenols	mg/L	N/A	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.048	0.002	0.001	0.004	0.003	< 0.001	0.016	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.63	1.24	0.9
Potassium	mg/L	N/A	2.8	2.6	2.9	2.8	1	1.7	1.2	1.2	1.2	0.9	1.5	1.2	1.3	1.7	1.7	1.5	1.6	2.3
Sodium	mg/L	200	15.5	13.8	16	14.9	89.4	78.9	72.6	99.3	74.8	84.1	58.4	34.1	96.5	121	53.8	17.3	45	118
Sulphate	mg/L	500	56	57	50	52	21	23	25	27	28	22	20	19	27	27	41	10	17	24
TDS	mg/L	500	486	468	482	473	**739**	**686**	**724**	**824**	**631**	**667**	**636**	439	**846**	**1012**	**636**	316	499	**940**
TSS	mg/L	N/A	520	276	14	10	1200	2800	1160	1440	2060	544	1160	1200	3000	1550	1220		2600	1490
Turbidity	NTU	N/A	457	277	7.4	11.6	977	557	800	1060	1290	476	795	435	1300	1730	1010		1140	2890
Colour	TCU	5	< 2	<2	<2	<2	3	< 2	**10**	**19**	6	< 2	2	4	< 2	2	5		4	8
Aluminum	mg/L	0.1	0.06	0.06	0.05	0.05	0.04	0.04	0.05	0.04	0.06	0.05	0.04	0.06	0.1	**0.11**	0.1	0.06	0.07	0.1
Antimony	mg/L	0.006	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0004	0.0001	0.0001	0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0003	0.0004	0.0001	0.0004	0.001	0.0006	0.0004	0.0001	0.0003	0.0002	0.0012	0.0009	0.0003
Barium	mg/L	1	0.208	0.179	0.189	0.192	0.104	0.099	0.132	0.109	0.104	0.09	0.113	0.078	0.119	0.151	0.097	0.041	0.073	0.167
Beryllium	mg/L	N/A	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.055	0.049	0.06	0.058	< 0.005	0.015	0.016	< 0.005	0.014	0.008	0.027	0.028	0.017	0.023	0.031	0.014	0.02	0.022
Cadmium	mg/L	0.005	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.000014	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000029
Chromium	mg/L	0.05	< 0.001	<0.001	<0.001	<0.001	< 0.0002	0.0045	0.0027	< 0.0002	0.0011	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001
Cobalt	mg/L	N/A	< 0.005	0.0002	0.0002	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.0001	0.005	0.0002	0.005	0.0009	< 0.005
Copper	mg/L	1	0.0002	0.0004	0.0001	0.0004	0.0008	0.0012	0.0009	0.0007	0.0006	0.0025	0.0017	0.0012	0.0006	0.0015	0.0018	0.0006	0.001	0.0005
Lead	mg/L	0.01	0.00003	<0.00002	0.00004	<0.00002	0.00008	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	0.00008	< 0.00002	< 0.00002	0.00035	0.00025	0.00003	0.00005	< 0.00009
Mercury	mg/L	0.001	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0005	0.0004	0.0002	0.0007	0.0005	0.0003	0.0003	0.0003	0.0005	0.0006	0.0005
Nickel	mg/L	N/A	< 0.01	0.0009	0.0009	<0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.951	0.89	1	0.955	0.55	0.464	0.641	0.612	0.533	0.453	0.666	0.338	0.611	0.676	0.471	0.266	0.445	0.672
Thallium	mg/L	N/A	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	<0.0001	<0.0001	<0.0001	0.0027	0.0017	0.001	0.0007	0.0005	0.0012	0.0017	0.0008	< 0.0001	0.0003	0.0002	< 0.0001	0.0001	< 0.0004
Zinc	mg/L	5	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	44-93-II 5-May-20	44-93-II 13-Jul-20	44-93-II 13-Oct-20	44-93-II 4-May-21	44-93-II 5-Jul-21	44-93-II 13-Oct-21	44-93-II 3-May-22	44-93-II 26-Jul-22	44-93-II 25-Oct-22	44-93-II 2-May-23	44-93-II 12-Jul-23	44-93-II 18-Oct-23	44-93-II 6-May-24	44-93-II 29-Jul-24	44-93-II 16-Oct-24	45-93 26-May-15	45-93 13-Jul-15	45-93 13-Oct-15
Alkalinity	mg/L	500	363	246	368	356	396	376	349	379	391	363	379	404	364	428	376	348	339	384
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.01	<0.01	<0.01			
Ammonia	mg/L	N/A	0.04	0.16	0.03	< 0.01	0.04	0.05	0.15	0.62	0.07	0.92	0.09	0.05	<0.05	0.15	0.97	0.02	0.15	0.02
BOD	mg/L	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3		<3	<3	<3	< 2		< 2
Calcium	mg/L	N/A	207	106	187	166	215	186	202	180	176	173	182	163	166	227	162	191	213	192
COD	mg/L	N/A	9	< 5	8	< 5	19	< 5	24	8	11	8	11	13	40	36	43	< 5	12	< 5
Chloride	mg/L	250	**315**	91.4	**310**	**273**	**349**	**300**	**279**	**303**	**254**	**296**	**376**	**387**	**343**	**420**	**254**	209	**258**	**258**
Conductivity	umhos/cm	N/A	1690	821	1690	1530	1890	1680	1670	1670	1620	1660	1790	1760	1850	2060	1560	1400	1560	1590
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	2	2.3	1.1	2.2	2.4	1.3	1.3	0.4	< 0.2	0.6	< 0.2	3.1	2.8	1.2	1.2	0.4	0.3	< 0.2
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 1	<0.1	<0.7	<0.1	<0.1	0.1	0.2	0.1
Hardness	mg/L	500	**578**	421	**549**	473	**604**	**529**	**573**	**543**	**502**	498	**531**	450	488	**628**	467	**538**	**599**	**545**
Ion Balance	%	N/A	1.39	3.29	0.513	5.06	0.375	1.36	2.95	3.1	4.5	3.85	9.74	12.3	8.45	2.36	1.12			
Iron	mg/L	0.3	< 0.005	**0.661**	< 0.005	0.008	0.005	0.016	< 0.005	0.023	0.009	< 0.005	< 0.005	<0.005	<0.005	0.082	<0.005	< 0.005	< 0.005	0.011
Magnesium	mg/L	N/A	14.6	37.9	19.8	14.1	16.1	15.5	16.3	22.7	15	15.8	18.6	10.3	18.1	15	15.2	14.5	16.2	15.9
Manganese	mg/L	0.05	0.002	0.013	< 0.001	0.001	0.001	0.002	< 0.001	0.045	0.001	0.001	0.001	<0.001	0.001	0.008	<0.001	< 0.001	< 0.001	< 0.001
Nitrate	mg/L	10	3.03	< 0.05	2.03	2.03	3.85	0.17	3.02	2.57	2.34	3.5	3.94	2.6	2.16	3.34	1.07	0.4	0.5	0.5
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.5	< 0.05	0.29	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.40	<0.05	<0.05	< 0.1	< 0.1	< 0.1
Tot Kjel N	mg/L	N/A	0.6	0.4	0.4	0.3	0.6	0.4	0.4	1.3	0.4	1.2	0.5	0.3	0.3	0.8	1.2	0.1	0.6	0.2
pH-Lab	pH unit	6.5-8.5	7.78	7.74	7.73	7.86	7.61	7.53	7.52	7.6	7.59	7.6	7.61	7.49	7.7	7.66	7.82	7.59	7.59	7.52
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	1.3	2.7	2.1	1.1	1.5	1.6	1.3	1.8	1.5	1.4	1.6	1.2	1.5	1.7	1.4	1.3	1.7	2
Sodium	mg/L	200	133	14.9	138	104	152	149	118	113	164	120	116	148	119	**222**	142	93.3	101	95.5
Sulphate	mg/L	500	25	53	29	25	27	29	28	28	27	27	30	29	29	29	24	23	23	23
TDS	mg/L	500	**914**	454	**908**	**797**	**997**	**907**	**854**	**876**	**872**	**851**	**952**	**963**	**1020**	**1140**	**853**	**744**	**818**	**819**
TSS	mg/L	N/A	3200	120	1280	575	384	645	498	346	238	376	480	660	466	395	2140	970	1850	595
Turbidity	NTU	N/A	1250	216	581	214	26.3	350	346	167	232	201	311	417	322	209	1520	779	1560	450
Colour	TCU	5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	<2	<2	< 2	6	7
Aluminum	mg/L	0.1	0.09	0.06	0.07	0.09	**0.11**	0.07	0.05	0.09	0.1	0.05	0.08	0.09	0.07	0.09	0.09	0.04	0.04	0.04
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0001	<0.0001	0.0002	<0.0001	0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0001	< 0.0001	0.0001	0.0001	0.0002	0.0002	0.0001	0.0003	0.0002	0.0001	0.0002	0.0001	0.0001	0.0002	0.0002	0.0001	0.0002	0.0002
Barium	mg/L	1	0.115	0.189	0.152	0.098	0.135	0.133	0.123	0.133	0.132	0.109	0.138	0.106	0.118	0.144	0.115	0.088	0.097	0.099
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.011	0.057	0.023	0.013	0.018	0.021	0.01	0.019	< 0.005	0.012	0.019	0.009	0.017	0.015	0.019	< 0.005	< 0.005	0.009
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.0002	0.0045
Cobalt	mg/L	N/A	< 0.0001	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0003	0.0003	<0.0001	0.0002	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0005	0.0003	0.0006	0.0008	0.0011	0.0008	0.0007	0.0027	0.0004	0.0006	0.0006	0.0009	0.0004	0.0011	0.0023	0.0006	0.0004	0.0011
Lead	mg/L	0.01	< 0.00004	0.00006	< 0.00004	0.00004	0.00007	0.00006	< 0.00004	0.00008	< 0.00004	< 0.00004	< 0.00004	<0.00004	0.00004	0.00017	0.00002	0.00007	0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0002	0.0004	0.0003	0.0003	0.0004	0.0003	0.0006	0.0003	0.0003	0.0005	0.0002	0.0004	0.0002	0.0004	0.0003	0.0002	0.0003
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0018	0.0004	0.0005	0.0004	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.001	0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.55	0.92	0.687	0.479	0.614	0.592	0.541	0.677	0.549	0.52	0.618	0.439	0.604	0.598	0.535	0.493	0.558	0.495
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	0.0002	<0.0001	0.0021	0.0044	0.0018
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	0.016

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	45-93 17-May-16	45-93 13-Jul-16	45-93 18-Oct-16	45-93 24-May-17	45-93 20-Jul-17	45-93 17-Oct-17	45-93 8-May-18	45-93 24-Jul-18	45-93 11-Oct-18	45-93 8-May-19	45-93 5-Jun-19	45-93 15-Jul-19	45-93 9-Oct-19	45-93 5-May-20	45-93 13-Jul-20	45-93 13-Oct-20	45-93 4-May-21	45-93 5-Jul-21
Alkalinity	mg/L	500	362	338	297	350	295	375	411	366	370	391		335	367	334	377	405	336	355
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Ammonia	mg/L	N/A	< 0.01	< 0.01	0.25	0.03	0.02	0.32	0.02	0.25	0.04	0.06	0.1	0.05	0.05	0.03	0.03	0.03	0.03	0.01
BOD	mg/L	N/A	< 2	< 3	< 3	< 3	< 3	< 3	< 3	< 2	< 2		4	< 3	< 3	< 3	< 3	< 3	< 3	< 3
Calcium	mg/L	N/A	203	227	219	243	237	203	298	254	255	230		227	231	184	172	158	145	158
COD	mg/L	N/A	28	< 5	< 5	12	< 5	34	13	45	< 5	77		< 5	30	12	15	27	5	9
Chloride	mg/L	250	**270**	**296**	**362**	**286**	**274**	**252**	**490**	**461**	**406**	**364**		**289**	**348**	250	230	209	199	226
Conductivity	umhos/cm	N/A	1620	1630	1710	1810	1720	1820	2160	2070	2010	1910		1700	1750	1460	1430	1380	1300	1360
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	0.5	0.4	0.4	0.7	0.5	1	0.9	1	1.8	1.6		0.3	1.9	1.9	2.8	1	1.9	3
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	**571**	**638**	**624**	**677**	**659**	**582**	**827**	**711**	**715**	**648**		**636**	**645**	**519**	475	446	410	444
Ion Balance	%	N/A														6.32	3.94	1.57	2.5	1.96
Iron	mg/L	0.3	< 0.005	0.066	< 0.005	< 0.005	< 0.005	0.08	< 0.005	0.006	< 0.005	0.007		< 0.005	0.007	< 0.005	< 0.005	< 0.005	0.006	< 0.005
Magnesium	mg/L	N/A	15.2	16.8	18.5	16.9	16.5	18.2	19.9	18.6	18.8	17.7		16.6	16.5	14.4	10.9	12.3	11.6	11.9
Manganese	mg/L	0.05	< 0.001	0.006	0.002	< 0.001	< 0.001	0.001	< 0.001	0.001	< 0.0002	< 0.001		0.001	0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001
Nitrate	mg/L	10	0.5	0.4	0.5	0.65	0.69	0.61	0.85	0.72	0.55	0.59		0.45	0.43	0.51	0.54	0.49	0.6	0.68
Nitrite	mg/L	1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.17	< 0.05		< 0.05	< 0.05	< 0.05	0.05	< 0.05	0.11	< 0.05
Tot Kjel N	mg/L	N/A	0.3	1.2	0.8	0.4	0.2	0.3	0.2	0.6	0.3	0.4		0.2	0.9	0.3	0.2	0.3	0.3	0.3
pH-Lab	pH unit	6.5-8.5	7.6	7.55	7.71	7.54	7.61	7.56	7.67	7.55	7.58	7.81		7.41	7.76	7.73	7.73	7.82	7.86	7.73
Phenols	mg/L	N/A	< 0.001	0.044	0.026	0.002	< 0.001	0.003	< 0.001	0.016	0.003	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1.53		0.5	2.95	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	1.2	1.5	1.6	1.2	1.3	1.6	1.6	1.7	1.6	1.5		1.9	1.7	1.5	1	1.5	1.1	1.3
Sodium	mg/L	200	107	113	113	115	109	126	153	140	128	137		136	150	134	141	139	121	129
Sulphate	mg/L	500	21	26	26	20	18	19	23	24	27	24		28	26	25	19	23	21	21
TDS	mg/L	500	**837**	**885**	**922**	**892**	**880**	**845**	**1231**	**1119**	**1058**	**1009**		**899**	**994**	**810**	**800**	**786**	**701**	**760**
TSS	mg/L	N/A	1260	9000	550	1280	1560	1760	780	3350	2780		900	1030	4200	2100	1100	2520	2760	1000
Turbidity	NTU	N/A	945	5680	235	780	932	1370	665	3120	2320		1060	1330	887	405	378	828	586	1190
Colour	TCU	5	< 2	9	8	7	8	**10**	< 2	< 2	< 2		< 2	< 2	< 2	< 2	< 2	2	< 2	< 2
Aluminum	mg/L	0.1	**0.11**	0.06	0.05	0.06	0.06	**0.17**	**0.11**	0.1	0.09	**0.11**		0.09	**0.12**	0.09	0.08	0.05	0.08	0.09
Antimony	mg/L	0.006	0.0002	0.0002	< 0.0001	< 0.0001	0.0001	0.0002	< 0.0001	0.0002	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0003	0.0002	< 0.0001	0.0016	0.0008	0.0013	< 0.0001	< 0.0001	< 0.0001	< 0.0001		0.0001	< 0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	0.114	0.092	0.098	0.112	0.115	0.122	0.152	0.139	0.137	0.115		0.12	0.124	0.095	0.096	0.09	0.077	0.085
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.01	0.017	< 0.005	0.007	0.009	0.012	0.011	0.007	0.011	0.009		0.01	0.011	0.009	0.009	0.011	0.009	0.011
Cadmium	mg/L	0.005	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015		< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	0.0026	< 0.0002	< 0.0002	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	0.002	< 0.001	0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.0001	0.005		0.0004	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.001	0.001	0.0007	0.0019	0.0013	0.0008	0.0003	0.0007	0.0007	0.0006		0.0026	< 0.0002	0.0007	0.0006	0.0004	0.0008	0.0006
Lead	mg/L	0.01	0.00014	< 0.00002	< 0.00002	0.00004	0.00006	0.00004	< 0.00002	0.00004	0.00002	0.00002		0.00011	< 0.00009	< 0.00004	0.00006	< 0.00004	< 0.00004	0.00005
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002		< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0005	0.0004	0.0003	0.0003	0.0002	0.0003	0.0002	0.0002	0.0003		0.0004	0.0003	0.0004	0.0002	0.0003	0.0003	0.0003
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00004	< 0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.579	0.554	0.464	0.545	0.598	0.582	0.67	0.608	0.588	0.545		0.526	0.54	0.449	0.375	0.404	0.363	0.391
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.001	0.0029	0.0008	0.0015	0.0022	0.0006	0.0001	0.0002	0.0002	0.0001		0.0002	< 0.0004	0.0002	0.0002	0.0002	0.0002	0.0002
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		0.011	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	45-93 13-Oct-21	45-93 3-May-22	45-93 26-Jul-22	45-93 25-Oct-22	45-93 2-May-23	45-93 12-Jul-23	45-93 18-Oct-23	45-93 6-May-24	45-93 29-Jul-24	45-93 16-Oct-24	45-93 (Dup) 16-Oct-24	45-95-I 26-May-15	45-95-I 13-Oct-15	45-95-I 25-May-16	45-95-I 11-Oct-16	45-95-I 24-May-17	45-95-I 18-Oct-17	45-95-I 8-May-18
Alkalinity	mg/L	500	371	365	437	402	400	426	426	383	396	377	378	318	328	330	341	351	298	358
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	<0.01	<0.01	0.02	<0.01	<0.01							
Ammonia	mg/L	N/A	0.04	0.42	0.33	< 0.01	3.63	0.43	0.13	<0.05	0.83	0.14	0.15	0.62	1.28	0.61	1.81	0.88	1.66	0.77
BOD	mg/L	N/A	< 3	< 3	< 3	< 3	< 3	< 3		<3	<3	<3	<3							
Calcium	mg/L	N/A	168	163	161	167	192	188	140	113	120	114	124	217	184	201	187	191	115	190
COD	mg/L	N/A	6	< 5	< 5	12	< 5	11	8	53	14	22	58	10	10	19	13	21	10	13
Chloride	mg/L	250	**256**	217	209	227	**338**	**345**	**321**	152	150	187	199	120	123	123	121	102	66.4	119
Conductivity	umhos/cm	N/A	1450	1420	1440	1500	1840	1760	1620	1220	1220	1340	1350	1600	1600	1590	1620	1600	896	1440
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		<0.005	<0.005	<0.005	<0.005							
DOC	mg/L	5	1.5	1.1	1.1	< 0.2	0.5	< 0.2	3.2	2.7	1.4	1.1	1.2	2.1	4.4	4	3.8	**5.4**	**5.1**	**5.2**
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.2	0.1	0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	470	458	453	475	**542**	**521**	390	322	330	316	345	**716**	**622**	**668**	**616**	**635**	326	**643**
Ion Balance	%	N/A	0.304	3.59	0.302	3.7	1.08	2.01	12.3	2.68	3.64	2.81	1.98							
Iron	mg/L	0.3	0.009	< 0.005	0.032	0.005	< 0.005	< 0.005	0.082	<0.005	0.016	<0.005	0.074	**2.76**	**4.17**	**2.93**	**3.89**	**3.23**	**0.548**	**2.85**
Magnesium	mg/L	N/A	12.2	12.3	12.3	14	15.5	12.4	9.76	9.45	7.28	7.45	8.58	42.1	39.3	40	36.2	38.2	9.36	40.8
Manganese	mg/L	0.05	0.001	< 0.001	0.003	< 0.001	< 0.001	0.001	0.002	<0.001	0.001	<0.001	0.003	**0.074**	**0.229**	**0.072**	**0.333**	**0.109**	**0.696**	**0.069**
Nitrate	mg/L	10	< 0.05	0.2	0.53	0.39	0.75	0.89	0.66	0.38	0.41	0.36	0.45	0.1	0.2	0.4	< 0.1	< 0.05	1.65	< 0.05
Nitrite	mg/L	1	0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.2	0.8	0.8	0.2	3.8	1	0.5	0.9	1	0.3	0.5	1.1	1.8	1.1	2.1	1.3	2.2	1.2
pH-Lab	pH unit	6.5-8.5	7.63	7.57	7.62	7.51	7.59	7.71	7.59	7.77	7.9	7.89	7.88	7.46	7.44	7.53	7.68	7.56	7.71	7.76
Phenols	mg/L	N/A	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.005	0.002	0.002	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	1.3	1.3	1.4	1.5	1.7	1.6	1.2	1.3	1.2	1	1	2.7	3	2.6	2.6	2.4	3.2	3.1
Sodium	mg/L	200	134	134	140	152	176	175	146	151	154	141	139	111	94.2	104	89.3	98	43.5	103
Sulphate	mg/L	500	23	27	22	25	26	25	27	18	13	16	15	393	369	354	359	291	12	284
TDS	mg/L	500	**818**	**773**	**808**	**828**	**989**	**1003**	**888**	**660**	**657**	**724**	**731**	**1080**	**1020**	**1030**	**1010**	**938**	432	**958**
TSS	mg/L	N/A	440	1850	940	352	1590	4680	1060	3050	323	3150	2380							
Turbidity	NTU	N/A	242	1360	290	508	823	1160	510	1600	325	1680	1430							
Colour	TCU	5	< 2	< 2	< 2	< 2	< 2	3	<2	<2	<2	<2	<2							
Aluminum	mg/L	0.1	0.07	0.04	0.09	0.1	0.06	0.09	0.08	0.05	0.04	0.06	0.06	0.05	0.04	0.05	0.05	0.05	0.06	0.09
Antimony	mg/L	0.006	< 0.0001	0.0002	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	<0.0001	0.0001	0.0001	<0.0001	0.0004	0.0004	**0.03**	0.0005	0.0008	0.0007	0.0002
Barium	mg/L	1	0.098	0.092	0.09	0.106	0.116	0.117	0.09	0.07	0.074	0.07	0.074	0.033	0.033	0.034	0.031	0.028	0.031	0.032
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.012	0.006	0.007	< 0.005	0.01	0.008	<0.005	0.011	0.011	0.007	0.009	0.119	0.138	0.101	0.13	0.13	0.034	0.145
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	< 0.000012	0.000114	<0.000015	<0.000015	<0.000015	<0.000015	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015
Chromium	mg/L	0.05	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.0002	0.004	< 0.0002	< 0.001	< 0.001	0.003
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0003	0.0002	<0.0001	0.0002	0.0003	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002
Copper	mg/L	1	0.0007	0.0008	0.0018	0.001	0.0006	0.0007	0.0008	0.0005	0.001	0.002	0.0015	0.0006	0.0007	0.0006	0.0011	0.0034	0.0024	0.0006
Lead	mg/L	0.01	< 0.00004	< 0.00004	0.00009	< 0.00004	< 0.00004	< 0.00004	<0.00004	0.00002	0.00005	<0.00002	<0.00002	0.00008	< 0.00002	0.00009	< 0.00002	0.00019	< 0.00002	0.00007
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0004	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0004	0.0002	0.0003	0.0004	0.0001	0.0002	0.0002	0.0003	0.0001	0.0002	0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0018	0.0006	0.0005	0.0004	0.0004	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	< 0.001	0.004	0.001	< 0.001	< 0.001	0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0006	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001
Strontium	mg/L	N/A	0.408	0.377	0.394	0.426	0.479	0.439	0.336	0.312	0.269	0.265	0.291	0.622	0.558	0.555	0.592	0.556	0.285	0.572
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0001	0.0024	0.0005	0.002	0.0018	0.0017	0.0004	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	45-95-I 11-Oct-18	45-95-I 9-May-19	45-95-I 5-May-20	45-95-I 13-Oct-20	45-95-I 4-May-21	45-95-I 13-Oct-21	45-95-I 3-May-22	45-95-I 25-Oct-22	45-95-I 2-May-23	45-95-I 18-Oct-23	45-95-I 6-May-24	45-95-I 16-Oct-24	45-95-II 26-May-15	45-95-II 13-Oct-15	45-95-II 25-May-16	45-95-II 11-Oct-16	45-95-II 24-May-17	45-95-II 18-Oct-17
Alkalinity	mg/L	500	358	331	340	333	352	363	338	337	337	351	332	321	353	346	325	358	388	349
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.95	0.7	0.79	0.73	1.1	0.68	0.94	0.67	1.86	0.96	0.81	1.03	2.02	2.17	2.31	4.94	5.6	1.39
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	188	178	175	163	155	164	153	137	129	131	134	135	142	124	117	133	162	185
COD	mg/L	N/A	22	16	8	11	18	17	13	9	21	12	27	15	35	23	40	14	21	11
Chloride	mg/L	250	116	118	107	107	109	109	111	148	119	105	109	113	113	90.3	76.6	97.3	84.5	89.1
Conductivity	umhos/cm	N/A	1450	1410	1350	1300	1290	1300	1280	1210	1180	1170	1200	1140	1140	958	925	1110	1240	1530
Cyanide	mg/L	0.2																		
DOC	mg/L	5	**6.2**	**5.7**	4.2	3	3.8	2.6	3.3	1.4	2.6	5	**5.4**	**5.7**	2	**5.2**	4.2	4.6	**5.8**	4.2
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.1	0.1	0.2	0.1	< 0.1	< 0.1
Hardness	mg/L	500	**618**	**596**	**588**	**543**	**526**	**551**	**514**	468	440	443	455	458	405	366	338	398	493	**613**
Ion Balance	%	N/A			4.99	2.26	0.0837	1.6	1.91	6.69	3.11	1.35	1.12	2.46						
Iron	mg/L	0.3	**3.86**	**2.49**	**2.82**	**2.47**	**3.03**	**2.85**	**2.42**	**2.44**	**2.35**	**2.27**	**2.51**	**2.29**	**1.13**	**1.93**	**1.22**	**3.51**	**0.882**	**4.53**
Magnesium	mg/L	N/A	36	36.8	36.5	33	33.8	34.2	31.9	30.6	28.4	28	28.9	29.1	12.1	13.4	11.2	16.1	21.3	36.7
Manganese	mg/L	0.05	**0.169**	**0.069**	**0.127**	**0.105**	**0.141**	**0.069**	**0.054**	**0.069**	**0.076**	0.046	**0.081**	0.044	**0.444**	**0.742**	**0.759**	**1.09**	**1.24**	**0.321**
Nitrate	mg/L	10	< 0.05	0.23	0.17	< 0.05	0.22	< 0.05	< 0.05	< 0.05	< 0.05	0.07	<0.05	<0.05	1.1	0.2	0.6	0.3	0.43	0.1
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.1	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	0.3	0.4	0.52	< 0.05
Tot Kjel N	mg/L	N/A	1.3	1	1.2	1.2	1.5	1	1.3	1	1.8	1.4	1.2	1.4	3.2	3.1	3	5.3	6.7	1.7
pH-Lab	pH unit	6.5-8.5	7.74	7.79	7.71	7.65	7.97	7.71	7.74	7.62	7.82	7.54	7.73	7.91	7.37	7.58	7.54	7.63	7.48	7.69
Phenols	mg/L	N/A	< 0.002	< 0.002	0.003	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.003	< 0.001
Phosphorus	mg/L	N/A	< 0.1	0.02	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.9	2.7	2.6	2.7	2.6	2.9	2.5	2.7	2.8	2.7	2.6	2.8	3.5	3.8	3	3.7	3.6	3.4
Sodium	mg/L	200	90.2	94.5	87	83.8	81.3	86.8	79.9	74.7	74.3	72.8	75.6	70.4	69.5	55.3	49	52.3	54.1	92
Sulphate	mg/L	500	255	258	215	210	202	203	173	181	140	124	126	107	79	19	52	72	109	209
TDS	mg/L	500	**908**	**890**	**831**	**802**	**800**	**822**	**757**	**780**	**698**	**628**	**645**	**612**	**640**	**517**	**509**	**603**	**676**	**832**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.08	0.09	0.09	0.08	0.08	0.07	0.08	0.09	0.04	0.04	0.05	0.04	0.04	0.03	0.03	0.05	0.05	0.09
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0004	0.0002	0.0003	0.0002	0.0004	0.0002	0.0002	0.0003	0.0003	0.0002	0.0003	0.0002	0.0008	0.0008	0.0004	0.0086	0.0007	0.0011
Barium	mg/L	1	0.033	0.03	0.031	0.032	0.03	0.035	0.034	0.042	0.038	0.04	0.049	0.044	0.037	0.038	0.031	0.043	0.048	0.04
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.14	0.129	0.135	0.136	0.125	0.138	0.122	0.119	0.115	0.13	0.117	0.125	0.038	0.067	0.043	0.059	0.094	0.145
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.0002	< 0.0002	0.0059	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	0.007	0.0004	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	0.0001	0.0004	0.0003	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0003	0.001	< 0.0001	0.001	0.0016	0.0002	0.0004	0.0011	0.0017	0.0002	0.0011	0.0004	0.0003	0.0006	0.0007	0.0007	0.0025	0.0008
Lead	mg/L	0.01	0.00006	0.00004	0.00002	0.00005	0.00007	< 0.00004	< 0.00004	0.00006	< 0.00004	<0.00002	0.00009	0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0001	0.0002	0.0001	0.0001	0.0002	0.0002	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0003	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.002	0.0023	0.0017	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.001	0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.007	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.475	0.558	0.501	0.481	0.467	0.522	0.47	0.447	0.433	0.425	0.451	0.43	0.362	0.352	0.312	0.392	0.439	0.513
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0028	0.0007	0.0018	0.003	0.0019	0.0004
Zinc	mg/L	5	0.012	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.011

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	45-95-II 8-May-18	45-95-II 11-Oct-18	45-95-II 9-May-19	45-95-II 8-Oct-19	45-95-II 5-May-20	45-95-II 13-Oct-20	45-95-II 4-May-21	45-95-II 13-Oct-21	45-95-II 3-May-22	45-95-II 25-Oct-22	45-95-II 2-May-23	45-95-II 18-Oct-23	45-95-II 6-May-24	45-95-II 16-Oct-24	46-95-I 26-May-15	46-95-I 13-Oct-15	46-95-I 25-May-16	46-95-I 11-Oct-16
Alkalinity	mg/L	500	363	324	332	278	268	287	280	334	299	348	272	356	279	293	356	364	387	400
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	5.69	3.25	3.52	0.37	0.12	2.43	1.99	0.79	3.58	1.42	2.77	0.17	0.07	0.38	2.31	2.2	2.51	3.38
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	170	131	138	118	99.9	114	104	123	111	123	93.5	128	93.3	106	123	111	126	118
COD	mg/L	N/A	38	49	22	15	12	21	56	6	18	23	17	19	60	46	11	9	20	14
Chloride	mg/L	250	94.9	104	96.6	103	43.3	91.2	67.9	62	78.4	109	32	89.5	26.4	80.5	148	156	161	164
Conductivity	umhos/cm	N/A	1230	984	1010	864	651	867	798	808	868	928	644	958	639	824	1120	1160	1220	1280
Cyanide	mg/L	0.2																		
DOC	mg/L	5	**5.6**	**5.2**	**6.3**	**5.1**	4.1	3.6	4	2.8	3.7	1.9	4.1	5	4	**5.2**	1.8	3.5	3.5	3.1
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.1	0.2	0.2	0.1
Hardness	mg/L	500	**543**	371	410	334	279	325	299	346	315	349	262	358	260	298	412	378	421	397
Ion Balance	%	N/A					2.59	2.18	1.79	1.24	2.31	3.14	3.3	2.07	1.74	3.62				
Iron	mg/L	0.3	**7.24**	**1.03**	**1.34**	**0.679**	0.01	**0.895**	**0.591**	0.089	0.113	0.201	< 0.005	<0.005	0.006	0.006	**5.09**	**4.79**	**5.44**	**5.32**
Magnesium	mg/L	N/A	28.6	10.5	15.7	9.57	7.08	9.72	9.61	9.26	9.11	10.2	6.85	9.2	6.59	7.82	25.2	24.7	25.7	24.7
Manganese	mg/L	0.05	**1.12**	**0.595**	**0.767**	**0.403**	0.044	**0.606**	**0.171**	**0.099**	**0.083**	**0.12**	0.003	0.013	0.003	0.025	**0.066**	**0.058**	**0.066**	**0.063**
Nitrate	mg/L	10	0.47	0.18	0.68	0.72	0.35	0.46	0.07	0.19	0.31	0.87	2.18	0.36	0.94	0.23	< 0.1	< 0.1	< 0.1	< 0.1
Nitrite	mg/L	1	0.08	0.06	< 0.05	< 0.05	< 0.05	0.3	< 0.05	0.09	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1
Tot Kjel N	mg/L	N/A	6.3	4.4	4.2	1	0.5	3.3	3.5	1.1	4	2.1	2.6	0.8	0.7	0.9	2.5	2.8	2.9	3.7
pH-Lab	pH unit	6.5-8.5	7.74	7.82	7.81	7.8	7.8	7.69	8.06	7.77	7.81	7.65	7.93	7.52	7.77	7.86	7.5	7.55	7.54	7.67
Phenols	mg/L	N/A	< 0.001	0.022	< 0.002	< 0.002	0.004	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.003
Phosphorus	mg/L	N/A	< 0.1	< 0.1	0.3	0.23	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	3.8	3.7	3.5	4.4	2.7	3.8	3.3	4.5	3.5	5.3	3	5.6	3.1	4.6	2.5	2.4	2.6	2.6
Sodium	mg/L	200	77	65	56.3	65.3	33.2	54.5	37.4	41.4	34.7	54.7	21.7	50.6	23.3	35.8	91.7	76.8	93.7	90.2
Sulphate	mg/L	500	165	29	59	4	6	14	31	10	16	7	9	10	6	3	< 1	< 1	< 1	< 1
TDS	mg/L	500	**773**	**543**	**575**	472	353	461	425	452	437	**520**	329	**510**	332	434	**614**	**594**	**648**	**650**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.09	0.06	0.08	0.07	0.06	0.04	0.07	0.06	0.07	0.08	0.02	0.04	0.03	0.03	0.04	0.03	0.03	0.03
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0005
Arsenic	mg/L	0.025	0.001	0.0005	0.0003	0.0003	< 0.0001	0.0004	0.0003	< 0.0001	0.0001	0.0003	< 0.0001	0.0001	<0.0001	<0.0001	0.0004	0.0002	0.0004	0.0021
Barium	mg/L	1	0.067	0.038	0.043	0.036	0.02	0.036	0.027	0.034	0.03	0.041	0.02	0.036	0.024	0.027	0.413	0.385	0.459	0.433
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.12	0.044	0.071	0.048	0.02	0.067	0.037	0.051	0.03	0.041	0.018	0.046	0.018	0.031	0.085	0.095	0.096	0.063
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.0002	< 0.0002	0.0085
Cobalt	mg/L	N/A	0.0018	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0001	0.0002	0.0002	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0008	0.0006	0.0014	0.0011	0.0009	0.0023	0.0022	0.0013	0.0015	0.0014	0.0013	0.0015	0.0011	0.003	0.0002	0.0004	0.0008	0.0004
Lead	mg/L	0.01	0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	0.00006	0.00005	< 0.00002	< 0.00002	0.00003	< 0.00002	<0.00002	<0.00002	<0.00002	0.00006	< 0.00002	< 0.00002	0.00033
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002	0.001	0.0002	0.0001	0.0001	0.0001	0.0002	< 0.0001	< 0.0001	0.0002	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0008	0.0004	0.0005	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.001	< 0.001	0.002	0.003
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.49	0.311	0.387	0.31	0.246	0.309	0.291	0.342	0.291	0.355	0.247	0.339	0.25	0.275	0.481	0.444	0.496	0.49
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0024	0.0007	0.0018	0.0036
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	46-95-I 24-May-17	46-95-I 18-Oct-17	46-95-I 8-May-18	46-95-I 11-Oct-18	46-95-I 9-May-19	46-95-I 8-Oct-19	46-95-I 5-May-20	46-95-I 13-Oct-20	46-95-I 4-May-21	46-95-I 13-Oct-21	46-95-I 3-May-22	46-95-I 25-Oct-22	46-95-I 2-May-23	46-95-I 18-Oct-23	46-95-I 6-May-24	46-95-I 16-Oct-24	46-95-II 26-May-15	46-95-II 13-Oct-15
Alkalinity	mg/L	500	445	451	462	494	455	466	480	474	487	**541**	**537**	**564**	**586**	**616**	**604**	**592**	361	370
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	4.57	5.8	5.86	6.43	8.3	10.6	9.89	9.47	14.5	20.6	25.4	31.8	29.2	32.1	26.8	28.3	2.63	2.47
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	139	143	149	158	156	164	157	159	142	150	159	142	150	161	163	174	127	113
COD	mg/L	N/A	19	15	22	28	25	21	30	21	24	25	32	23	36	44	37	32	24	23
Chloride	mg/L	250	149	131	183	189	203	204	186	195	197	199	216	**258**	247	21.5	221	218	149	156
Conductivity	umhos/cm	N/A	1370	1390	1350	1450	1450	1460	1480	1500	1480	1560	1730	1730	1800	1820	1830	1780	1140	1180
Cyanide	mg/L	0.2																		
DOC	mg/L	5	4.8	4.1	**5.4**	**5.2**	**6.2**	**5.6**	5	3.1	4.5	3.8	4.7	1.8	5	**7.8**	**8.6**	**9.1**	1.5	3.4
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.1	0.1
Hardness	mg/L	500	464	478	**501**	**522**	**520**	**549**	**526**	**527**	494	**518**	**536**	496	**518**	**547**	**561**	**590**	421	384
Ion Balance	%	N/A							5.34	3.82	3.39	3.44	5.14	0.66	5.45	14.7	1.11	0.124		
Iron	mg/L	0.3	**6.66**	**7.49**	**7.57**	**8.92**	**7.66**	**9.06**	**8.71**	**9.14**	**8.36**	**9.15**	**10.7**	**10**	**11.8**	**13.3**	**13.9**	**14.1**	**6.36**	**5.56**
Magnesium	mg/L	N/A	28	29.3	31.3	31	31.6	33.8	32.5	31.4	33.7	34.8	33.7	34.3	34.5	35.2	37.2	38	25.4	24.9
Manganese	mg/L	0.05	**0.073**	**0.078**	**0.076**	**0.085**	**0.078**	**0.086**	**0.079**	**0.08**	**0.072**	**0.077**	**0.081**	**0.075**	**0.083**	**0.088**	**0.087**	**0.093**	**0.072**	**0.063**
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05	< 0.05	0.21	< 0.05	0.13	< 0.05	0.21	< 0.05	0.07	< 0.05	0.05	<0.05	<0.05	0.1	0.1	< 0.1
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.14	< 0.05	< 0.05	0.14	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1
Tot Kjel N	mg/L	N/A	6.3	6.9	6.8	7.9	9.6	12	11.1	11.6	16.4	22.4	31.7	36.8	32.4	26.3	29.9	32.2	3.1	3.1
pH-Lab	pH unit	6.5-8.5	7.57	7.69	7.74	7.7	7.74	7.72	7.61	7.59	7.76	7.59	7.71	7.47	7.68	7.5	7.41	7.62	7.46	7.52
Phenols	mg/L	N/A	0.004	< 0.001	< 0.001	0.008	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	0.02	0.06	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	3.1	3.9	4.4	4	4.7	5.3	4.9	4.9	5.6	6.7	7.9	9.2	9.3	9	9.2	8.8	2.5	2.5
Sodium	mg/L	200	104	103	113	109	113	113	109	116	113	118	124	124	127	125	131	119	92.2	77.1
Sulphate	mg/L	500	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	<1	<1	2	1	1
TDS	mg/L	500	**703**	**696**	**774**	**805**	**800**	**822**	**799**	**800**	**811**	**868**	**907**	**957**	**931**	**997**	**1010**	**979**	**624**	**602**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.04	0.07	0.07	0.07	0.08	0.09	0.08	0.08	0.07	0.05	0.08	0.09	0.04	0.06	0.06	0.05	0.04	0.02
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0008	0.0007	< 0.0001	< 0.0001	< 0.0001	< 0.0003	< 0.0001	< 0.0001	< 0.0003	< 0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0004	0.0003
Barium	mg/L	1	0.53	0.64	0.652	0.651	0.72	0.776	0.728	0.767	0.723	0.885	**1.02**	**1.1**	**1.08**	**1.1**	**1.31**	**1.12**	0.432	0.4
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002
Boron	mg/L	5	0.1	0.109	0.112	0.109	0.108	0.112	0.113	0.117	0.104	0.106	0.108	0.103	0.115	0.116	0.108	0.103	0.087	0.097
Cadmium	mg/L	0.005	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	0.00003	< 0.00002
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.0002
Cobalt	mg/L	N/A	< 0.005	< 0.005	0.0002	< 0.005	< 0.005	< 0.005	0.0003	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0005	0.0008	0.0007	< 0.005	< 0.005
Copper	mg/L	1	0.0009	0.0008	0.0008	< 0.0001	0.001	0.0003	< 0.0001	0.0011	0.0015	0.0001	0.0003	0.0003	0.0004	0.0003	0.001	0.0003	0.0002	0.0004
Lead	mg/L	0.01	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00009	0.00004	0.00006	< 0.00009	< 0.00004	< 0.00004	< 0.00004	< 0.00004	<0.00002	0.00005	<0.00002	0.00011	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002	0.0001	0.0001	< 0.0001	0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0023	0.0025	0.0023	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.002	0.002	0.002	<0.001	<0.001	<0.001	0.001	< 0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.512	0.555	0.577	0.554	0.629	0.642	0.611	0.624	0.605	0.666	0.661	0.681	0.688	0.704	0.765	0.728	0.488	0.454
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.002	0.0008	0.0002	0.0002	0.0002	< 0.0004	0.0002	0.0002	< 0.0004	< 0.0001	0.0003	0.0003	0.0003	0.0004	0.0004	0.0003	0.0028	0.0007
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	46-95-II 25-May-16	46-95-II 11-Oct-16	46-95-II 24-May-17	46-95-II 18-Oct-17	46-95-II 8-May-18	46-95-II 11-Oct-18	46-95-II 9-May-19	46-95-II 8-Oct-19	46-95-II 5-May-20	46-95-II 13-Oct-20	46-95-II 4-May-21	46-95-II 13-Oct-21	46-95-II 3-May-22	46-95-II 25-Oct-22	46-95-II 2-May-23	46-95-II 18-Oct-23	46-95-II 6-May-24	46-95-II 16-Oct-24
Alkalinity	mg/L	500	400	411	463	466	470	481	486	471	488	485	488	**548**	**545**	**556**	**570**	**625**	**605**	**608**
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	2.96	4.21	6.11	7.4	7.93	8.13	10.9	14.2	12.6	13.2	21.8	25.5	35.5	40.7	32.4	39.4	32	38.9
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	130	121	140	144	147	162	157	158	157	160	137	146	152	141	144	151	159	171
COD	mg/L	N/A	26	14	26	22	24	43	29	36	21	27	31	43	45	30	28	43	42	34
Chloride	mg/L	250	164	167	151	133	184	191	207	201	187	197	194	196	217	**262**	244	216	221	222
Conductivity	umhos/cm	N/A	1250	1300	1420	1440	1370	1480	1470	1480	1500	1530	1480	1560	1750	1750	1770	1830	1840	1830
Cyanide	mg/L	0.2																		
DOC	mg/L	5	3.3	3.3	**5.3**	4.2	**5.5**	6	**6.5**	**5.7**	**5.2**	3.4	4.8	3.8	4.9	1.8	3.8	7	**8.7**	**9.7**
Fluoride	mg/L	1.5	0.2	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.7	<0.1	<0.1
Hardness	mg/L	500	431	403	465	481	497	**533**	**521**	**529**	**528**	**525**	481	**509**	**516**	491	497	**518**	**550**	**585**
Ion Balance	%	N/A									5.76	3.38	4.32	3.08	5.77	0.808	6.66	5.37	1.89	1.2
Iron	mg/L	0.3	**6.78**	**6.31**	**8.01**	**8.46**	**8.24**	**10.3**	**8.78**	**10.3**	**10**	**10.4**	**9.05**	**9.97**	**11.3**	**11**	**11.4**	0.006	**14.4**	**15.6**
Magnesium	mg/L	N/A	26	24.7	27.8	29.5	31.5	31.2	31.2	32.6	33	30.4	33.7	35	33.2	33.7	33.6	34.3	36.8	38.2
Manganese	mg/L	0.05	**0.072**	**0.068**	**0.079**	**0.082**	**0.079**	**0.092**	**0.083**	**0.085**	**0.082**	**0.086**	**0.072**	**0.077**	**0.082**	**0.076**	**0.08**	**0.083**	**0.088**	**0.091**
Nitrate	mg/L	10	< 0.1	0.1	< 0.05	< 0.05	< 0.05	< 0.05	0.19	< 0.05	0.11	< 0.05	0.22	0.23	< 0.05	< 0.05	< 0.05	<0.40	<0.05	<0.05
Nitrite	mg/L	1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.14	< 0.05	< 0.05	0.13	< 0.05	< 0.05	< 0.05	<0.40	<0.05	<0.05
Tot Kjel N	mg/L	N/A	3.8	5.8	7.4	9.5	9.2	10.2	12.4	15.8	14.2	13.8	20.2	28.5	46	43.4	32.6	41.5	32.8	39.3
pH-Lab	pH unit	6.5-8.5	7.45	7.63	7.48	7.67	7.74	7.69	7.71	7.69	7.61	7.49	7.67	7.63	7.69	7.44	7.67	7.55	7.45	7.67
Phenols	mg/L	N/A	< 0.001	0.008	0.006	0.002	< 0.001	0.01	< 0.002	0.013	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.04	0.27	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1
Potassium	mg/L	N/A	2.7	2.7	3.5	4.7	4.9	4.5	5.2	5.7	5.5	5.5	6.1	7.4	9	9.6	9	10	9.7	9.6
Sodium	mg/L	200	95.5	91.1	105	106	116	110	114	109	110	118	111	116	125	122	120	122	130	120
Sulphate	mg/L	500	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1	7	< 1	< 1	1	<2	<1	2
TDS	mg/L	500	**666**	**666**	**722**	**715**	**785**	**809**	**830**	**817**	**812**	**812**	**812**	**880**	**920**	**966**	**905**	**1000**	**1010**	**1000**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.03	0.04	0.04	0.08	0.07	0.07	0.08	0.09	0.08	0.08	0.08	0.06	0.08	0.09	0.04	0.05	0.05	0.05
Antimony	mg/L	0.006	< 0.0001	0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.025	0.0005	0.0023	0.0008	0.0007	< 0.0001	< 0.0001	0.0001	< 0.0003	< 0.0001	< 0.0001	< 0.0003	< 0.0001	0.0001	0.0002	< 0.0001	0.0001	0.0001	0.0001
Barium	mg/L	1	0.493	0.463	0.564	0.68	0.686	0.712	0.761	0.812	0.784	0.835	0.757	0.928	**1.08**	**1.14**	**1.03**	**1.06**	**1.32**	**1.18**
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	0.099	0.065	0.101	0.114	0.115	0.114	0.107	0.109	0.116	0.12	0.102	0.105	0.109	0.104	0.107	0.093	0.106	0.103
Cadmium	mg/L	0.005	< 0.00002	0.00003	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.05	< 0.0002	0.0041	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	0.0003	< 0.005	< 0.005	< 0.005	0.0003	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	0.0005	0.0009	0.0008
Copper	mg/L	1	0.0008	0.0011	0.0009	0.001	0.0014	< 0.0001	0.001	0.0003	< 0.0001	0.0008	0.0016	0.0001	0.0018	0.0003	0.0003	0.0002	0.0011	0.0002
Lead	mg/L	0.01	< 0.00002	0.00013	< 0.00002	< 0.00002	0.00004	< 0.00002	0.00004	< 0.00009	< 0.00004	0.00004	< 0.00009	0.00004	< 0.00004	< 0.00004	< 0.00004	<0.00002	0.00004	<0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	N/A	0.0001	0.0018	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002	0.0001	0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0021	0.0024	0.0023
Selenium	mg/L	0.01	0.002	0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.002	0.002	0.002	<0.001	<0.001	<0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001
Strontium	mg/L	N/A	0.513	0.505	0.534	0.568	0.605	0.579	0.644	0.624	0.629	0.637	0.608	0.664	0.662	0.67	0.662	0.685	0.751	0.738
Thallium	mg/L	N/A	< 0.00005	0.00007	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	N/A	0.0022	0.002	0.0024	0.0009	0.0002	0.0002	0.0002	< 0.0004	0.0002	0.0002	< 0.0004	< 0.0001	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	0.017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	47-96-I 26-May-15	47-96-I 13-Oct-15	47-96-I 25-May-16	47-96-I 11-Oct-16	47-96-I 24-May-17	47-96-I 18-Oct-17	47-96-I 8-May-18	47-96-I 11-Oct-18	47-96-I 9-May-19	47-96-I 8-Oct-19	47-96-I 5-May-20	47-96-I 13-Oct-20	47-96-I 4-May-21	47-96-I 13-Oct-21	47-96-I 3-May-22	47-96-I 25-Oct-22	47-96-I 2-May-23	47-96-I 18-Oct-23
Alkalinity	mg/L	500	329	340	388	335	341	385	355	369	289	318	337	381	430	416	437	430	435	429
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.21	0.17	0.18	0.16	0.46	0.19	0.23	0.24	0.24	0.41	0.47	0.18	1.99	2.91	2.11	2.78	3.05	1.53
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	114	105	128	112	68.9	122	106	120	74.5	113	118	136	140	136	148	129	133	129
COD	mg/L	N/A	8	< 5	13	< 5	30	< 5	< 5	18	13	18	22	15	21	20	15	30	20	20
Chloride	mg/L	250	93.3	107	100	110	88.9	81.5	95.3	105	83.2	107	104	117	184	206	212	243	240	185
Conductivity	umhos/cm	N/A	902	934	1060	915	923	1090	900	984	804	927	979	1100	1330	1360	1510	1470	1480	1350
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1	1.3	1.4	1.4	2.1	1.6	2.7	3.5	3.8	3.3	1.9	1.7	3.3	2.3	2.8	0.7	2.5	4.1
Fluoride	mg/L	1.5	0.3	0.3	0.3	0.2	0.4	< 0.1	< 0.1	< 0.1	0.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1
Hardness	mg/L	500	438	412	485	426	320	466	415	450	340	434	446	498	**519**	484	**533**	478	490	475
Ion Balance	%	N/A											6.19	3.81	2.45	2.03	3.38	2.41	2.87	0.639
Iron	mg/L	0.3	**1.04**	**1.13**	**1.48**	**1.31**	0.155	**1.36**	**1.01**	**1.25**	< 0.005	**1.02**	**1.12**	**1.56**	**1.65**	**1.59**	**2.24**	**2.28**	**2.27**	**1.8**
Magnesium	mg/L	N/A	37.1	36.4	40.3	35.3	35.8	39.1	36.6	36.4	37.5	36.8	36.7	38.5	41	35	39.7	37.8	38.2	37
Manganese	mg/L	0.05	0.02	0.02	0.027	0.027	0.006	0.029	0.022	0.027	0.007	0.021	0.024	0.033	**0.101**	**0.184**	**0.14**	**0.136**	**0.132**	**0.09**
Nitrate	mg/L	10	< 0.1	< 0.1	0.3	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	0.18	< 0.05	0.09	< 0.05	0.16	< 0.05	< 0.05	0.26	< 0.05	0.07
Nitrite	mg/L	1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.09	< 0.05	< 0.05	0.11	< 0.05	< 0.05	< 0.05	<0.05
Tot Kjel N	mg/L	N/A	0.2	0.3	0.4	0.4	0.7	0.2	1.1	0.4	0.6	0.8	0.7	0.4	2.5	3.3	2.3	4.3	2.8	1.9
pH-Lab	pH unit	6.5-8.5	7.62	7.63	7.6	7.85	7.65	7.71	7.9	7.86	7.95	7.87	7.82	7.67	7.96	7.7	7.73	7.53	7.82	7.63
Phenols	mg/L	N/A	< 0.001	< 0.001	< 0.001	0.005	0.003	0.001	< 0.001	0.003	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.01	0.08	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1
Potassium	mg/L	N/A	2.4	2.3	2.2	1.8	3.3	2.3	2.6	2.2	3.6	2.5	2.4	2.3	2.8	3.1	2.7	3	3.1	2.5
Sodium	mg/L	200	51.5	40.9	41	42.6	31.7	43.4	50.5	51.4	39.3	52.6	51.1	47.1	88	113	112	113	108	93.8
Sulphate	mg/L	500	13	15	13	16	13	11	13	14	10	11	14	16	< 1	11	6	5	5	6
TDS	mg/L	500	**511**	**512**	**560**	**520**	448	**532**	**519**	**553**	422	**515**	**530**	**587**	**718**	**759**	**788**	**796**	**791**	**733**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.03	0.02	0.04	0.03	0.02	0.06	0.07	0.06	0.04	0.07	0.07	0.08	0.07	0.06	0.08	0.09	0.04	0.04
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Arsenic	mg/L	0.025	0.0003	0.0002	0.0005	0.0032	0.0002	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Barium	mg/L	1	**1.07**	0.886	0.996	0.72	**2.2**	0.923	0.918	0.78	**1.92**	0.972	0.836	0.93	0.507	0.497	0.453	0.525	0.486	0.429
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001
Boron	mg/L	5	0.083	0.086	0.084	0.037	0.193	0.086	0.091	0.079	0.179	0.093	0.083	0.081	0.073	0.083	0.08	0.072	0.073	0.074
Cadmium	mg/L	0.005	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015
Chromium	mg/L	0.05	< 0.0002	< 0.0002	< 0.0002	0.0025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.008	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	<0.0001
Copper	mg/L	1	< 0.0001	0.0002	0.0001	0.0003	0.0002	0.0003	0.0003	0.0003	0.0005	0.0003	< 0.0001	0.0014	0.0016	0.0002	0.0003	0.0003	0.0004	0.0002
Lead	mg/L	0.01	0.00005	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004	0.00007	< 0.00004	< 0.00004	< 0.00004	< 0.00004	<0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002
Molybdenum	mg/L	N/A	< 0.0001	< 0.0001	0.0002	0.0011	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0002	0.0001	0.0002	0.0001	<0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	0.0021
Selenium	mg/L	0.01	0.001	< 0.001	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.001	0.001	<0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Strontium	mg/L	N/A	1.06	0.898	1.02	0.854	2.06	0.908	0.932	0.791	1.91	0.976	0.865	0.937	0.586	0.549	0.541	0.547	0.535	0.537
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005
Vanadium	mg/L	N/A	0.0025	0.0008	0.0021	0.0013	0.0014	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	47-96-I 6-May-24	47-96-I 16-Oct-24	47-96-II 26-May-15	47-96-II 13-Oct-15	47-96-II 25-May-16	47-96-II 11-Oct-16	47-96-II 24-May-17	47-96-II 18-Oct-17	47-96-II 8-May-18	47-96-II 11-Oct-18	47-96-II 9-May-19	47-96-II 8-Oct-19	47-96-II 5-May-20	47-96-II 13-Oct-20	47-96-II 4-May-21	47-96-II 13-Oct-21	47-96-II 3-May-22	47-96-II 25-Oct-22
Alkalinity	mg/L	500	403	394	434	442	390	397	413	389	453	442	435	463	456	417	404	392	361	389
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.95	1.25	3.28	3.15	1.71	2.38	2.19	2.02	1.93	2.32	4.54	9.84	3.18	1.88	10.9	14	8.33	13.3
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	122	127	155	132	136	127	140	138	149	155	158	157	168	159	136	116	117	117
COD	mg/L	N/A	23	14	21	71	56	5	93	70	6	66	80	78	72	36	78	73	25	45
Chloride	mg/L	250	148	137	145	151	135	134	115	94.5	140	152	193	204	187	149	243	237	229	**312**
Conductivity	umhos/cm	N/A	1250	1170	1260	1290	1160	1190	1210	1170	1200	1290	1370	1460	1430	1270	1480	1420	1430	1530
Cyanide	mg/L	0.2																		
DOC	mg/L	5	**5.5**	6	**6.5**	2.2	1.7	1.8	2.7	2.7	3	4.3	**5.2**	4.9	3.6	1.9	4.3	1.6	3	1
Fluoride	mg/L	1.5	<0.1	<0.1	0.1	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	461	476	**525**	458	467	431	473	472	**513**	**522**	**528**	**529**	**566**	**524**	482	394	401	401
Ion Balance	%	N/A	0.787	1.6											7.67	6.31	5.35	3.14	4.37	2.09
Iron	mg/L	0.3	**1.71**	**1.73**	**16**	**14**	**8.79**	**12.2**	**10.9**	**11.3**	**12.3**	**14.1**	**14.6**	**17.9**	**19.8**	**17.7**	**12.5**	**9.6**	**10.2**	**10.5**
Magnesium	mg/L	N/A	38.1	38.8	33.6	31.3	30.9	27.6	29.7	30.9	34.1	32.7	32.3	33.1	35.5	30.9	34.5	25.2	26.4	26.4
Manganese	mg/L	0.05	**0.076**	**0.074**	**0.371**	**0.284**	**0.263**	**0.29**	**0.332**	**0.309**	**0.319**	**0.321**	**0.312**	**0.263**	**0.331**	**0.415**	**0.202**	**0.199**	**0.24**	**0.257**
Nitrate	mg/L	10	<0.05	<0.05	0.2	< 0.1	0.1	0.1	< 0.05	0.11	< 0.05	< 0.05	0.19	< 0.05	0.09	< 0.05	0.16	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.14	< 0.05	< 0.05	0.16	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	1.2	1.8	4	3.8	2.4	3.1	2.9	3.7	3.3	3.6	6.3	12.5	4.5	2.8	13.1	15.8	11.2	15.7
pH-Lab	pH unit	6.5-8.5	7.67	7.83	7.49	7.46	7.57	7.7	7.62	7.68	7.73	7.69	7.73	7.64	7.64	7.57	7.88	7.7	7.84	7.65
Phenols	mg/L	N/A	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.004	0.003	0.003	< 0.001	0.018	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	14.4	6.78	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.6	2.4	1.6	1.8	1.3	1.1	1.1	1.6	1.4	1.6	2.3	3.8	1.8	1.5	3.6	4.7	3.2	4.6
Sodium	mg/L	200	78.6	68.8	86.6	73.1	70.4	63.6	71.5	63.9	78.9	82.7	104	118	96.9	71.9	134	141	132	145
Sulphate	mg/L	500	18	26	12	12	19	19	15	15	15	13	4	< 1	3	16	16	7	2	3
TDS	mg/L	500	**676**	**630**	**716**	**680**	**637**	**626**	**634**	**591**	**706**	**719**	**776**	**825**	**790**	**697**	**836**	**793**	**748**	**869**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.04	0.04	0.04	0.03	0.04	0.07	0.04	0.06	0.07	0.07	0.08	0.09	0.08	0.08	0.1	0.05	0.07	0.09
Antimony	mg/L	0.006	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	<0.0001	<0.0001	0.0048	0.0037	0.0032	0.0008	0.0045	0.0041	0.0036	0.0041	0.0041	0.0054	0.004	0.0043	0.0033	0.0041	0.0037	0.005
Barium	mg/L	1	0.545	0.452	0.088	0.08	0.078	0.063	0.065	0.077	0.076	0.075	0.09	0.114	0.088	0.078	0.087	0.087	0.073	0.094
Beryllium	mg/L	N/A	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.087	0.088	0.063	0.079	0.065	0.033	0.061	0.072	0.078	0.087	0.1	0.129	0.097	0.089	0.097	0.124	0.088	0.105
Cadmium	mg/L	0.005	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012
Chromium	mg/L	0.05	<0.001	<0.001	< 0.0002	< 0.0002	< 0.0002	0.0063	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.0003	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0011	< 0.005	< 0.005	< 0.005	0.001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0002	0.0003	0.0002	0.0004	0.0005	0.0008	0.0025	0.0009	0.0015	0.0004	0.0012	0.0005	< 0.0001	0.001	0.0013	0.0004	0.0004	0.0007
Lead	mg/L	0.01	0.00002	<0.00002	0.00008	< 0.00002	< 0.00002	0.00003	0.00006	< 0.00002	0.00006	0.00003	0.00003	< 0.00009	0.00003	0.00006	0.00023	< 0.00004	< 0.00004	0.00012
Mercury	mg/L	0.001	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	<0.0001	<0.0001	0.0004	0.0005	0.0006	0.0003	0.0007	0.0007	0.0006	0.0006	0.0005	0.0006	0.0005	0.0005	0.0004	0.0006	0.0006	0.0004
Nickel	mg/L	N/A	0.0027	0.0022	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	<0.001	<0.001	0.002	< 0.001	0.002	0.006	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.001
Silver	mg/L	N/A	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	0.00002	0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.68	0.639	0.483	0.443	0.438	0.421	0.405	0.419	0.442	0.428	0.5	0.524	0.499	0.468	0.475	0.43	0.394	0.429
Thallium	mg/L	N/A	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00008	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	<0.0001	<0.0001	0.0033	0.0009	0.0019	0.0028	0.002	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0004	0.0002	< 0.0001	0.0003	< 0.0001	< 0.0001	0.0002
Zinc	mg/L	5	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.019	0.016	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	47-96-II 2-May-23	47-96-II 18-Oct-23	47-96-II 6-May-24	47-96-II 16-Oct-24	48-96-I 26-May-15	48-96-I 13-Oct-15	48-96-I 25-May-16	48-96-I 12-Oct-16	48-96-I 23-May-17	48-96-I 18-Oct-17	48-96-I 8-May-18	48-96-I 11-Oct-18	48-96-I 8-Oct-19	48-96-I 5-May-20	48-96-I 13-Oct-20	48-96-I 4-May-21	48-96-I 13-Oct-21	48-96-I 3-May-22
Alkalinity	mg/L	500	460	**516**	404	391	284	288	287	289	287	293	294	294	284	285	278	280	294	283
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	30.3	48	34.3	38.3	< 0.01	0.09	< 0.01	0.16	< 0.01	0.1	0.03	0.06	0.17	0.15	0.01	0.04	0.18	0.57
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	122	114	126	104	77.4	62.2	70.4	71.8	69.7	66.5	70.1	71.3	73.5	73.1	70.4	64.9	71	71.6
COD	mg/L	N/A	31	99	93	91	< 5	< 5	6	< 5	8	< 5	< 5	15	8	< 5	71	12	9	9
Chloride	mg/L	250	**278**	**252**	**251**	229	50.3	45.1	48.9	43	37.1	32.9	44.6	47.2	53.8	47.4	47.4	45.6	58.2	66.2
Conductivity	umhos/cm	N/A	1730	1810	1620	1560	694	676	680	685	656	695	668	697	695	682	674	645	720	776
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.2	**6.6**	4.9	**6.5**	0.9	0.7	1.1	1.6	1.2	1.6	1.7	3	3	2.8	2	2.8	1.8	2.1
Fluoride	mg/L	1.5	< 0.1	<0.7	<0.1	<0.1	0.4	0.4	0.4	0.4	0.3	0.3	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	412	383	405	347	348	308	330	341	326	323	336	336	347	346	320	323	336	338
Ion Balance	%	N/A	2.88	5.38	1.95	1.85										5.32	2.83	4.28	2.02	2.47
Iron	mg/L	0.3	**13**	**14.9**	**13**	**12.8**	< 0.005	0.026	< 0.005	0.033	< 0.005	0.033	0.012	< 0.005	0.061	0.014	0.007	0.005	0.006	0.006
Magnesium	mg/L	N/A	25.7	23.9	21.5	21.3	37.5	37.1	37.5	39.3	36.9	38.1	39	38.4	39.7	39.7	35	39.1	38.6	38.6
Manganese	mg/L	0.05	**0.376**	**0.286**	**0.267**	**0.229**	< 0.001	0.009	< 0.001	0.013	< 0.001	0.015	< 0.001	0.008	0.018	0.005	0.003	< 0.001	0.001	< 0.001
Nitrate	mg/L	10	< 0.05	<0.40	<0.05	<0.05	0.3	0.1	0.3	0.1	0.17	< 0.05	0.16	< 0.05	< 0.05	0.17	0.09	< 0.05	0.08	0.13
Nitrite	mg/L	1	< 0.05	<0.40	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05
Tot Kjel N	mg/L	N/A	27.4	59.4	38.6	38.2	0.2	0.3	0.2	0.3	0.1	0.3	0.3	0.2	0.3	0.4	0.1	0.2	0.2	0.6
pH-Lab	pH unit	6.5-8.5	7.8	7.67	7.93	7.93	7.9	7.9	7.96	8.08	8.08	7.99	8.12	7.9	7.95	7.88	7.97	8.19	7.97	8.05
Phenols	mg/L	N/A	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.003	0.002	0.002	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.03	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	9.2	14.9	10.8	11.4	3.1	2.8	3	2.8	2.8	3.6	3.5	3.2	3.6	3.3	3.2	3.2	3.5	3.4
Sodium	mg/L	200	160	157	154	135	25.6	18.9	21	21.7	20.9	20.8	22.6	21.4	22.9	20.8	21.2	24.5	33.1	33.8
Sulphate	mg/L	500	2	<2	2	2	8	5	7	5	5	3	6	4	< 1	4	4	5	19	20
TDS	mg/L	500	**887**	**995**	**886**	**851**	374	344	361	358	345	342	362	362	364	359	348	350	400	404
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.06	0.05	**0.18**	0.03	0.02	0.01	0.02	0.01	0.02	0.04	0.05	0.05	0.05	0.03	0.05	0.05	0.04	0.05
Antimony	mg/L	0.006	< 0.0001	<0.0001	0.0003	<0.0001	< 0.0001	0.0001	0.0001	0.0004	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0039	0.0052	0.0009	0.0046	0.0004	0.0004	0.0005	0.0006	0.0003	0.0004	0.0002	0.0002	0.0002	< 0.0001	0.0002	0.0002	< 0.0001	0.0002
Barium	mg/L	1	0.137	0.169	0.152	0.126	0.916	0.873	0.942	0.949	0.898	0.988	0.964	0.968	**1.03**	0.976	0.995	0.881	**1.05**	**1.04**
Beryllium	mg/L	N/A	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.131	0.148	0.108	0.11	0.108	0.118	0.117	0.119	0.12	0.125	0.13	0.117	0.128	0.122	0.123	0.139	0.134	0.142
Cadmium	mg/L	0.005	< 0.000012	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	0.000018	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.0002	< 0.0002	0.0016	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	0.0005	0.0008	0.0007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.007	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0004	0.0002	0.0009	0.0003	< 0.0001	0.0002	0.0002	0.0002	0.0003	0.0007	0.0003	0.0006	0.0003	0.0002	0.0016	0.0018	0.0004	0.0007
Lead	mg/L	0.01	0.00012	0.00005	<0.00002	<0.00002	0.00004	< 0.00002	< 0.00002	0.00006	< 0.00002	< 0.00002	0.00004	0.00005	0.00005	0.00003	0.00007	0.00011	0.00003	0.00005
Mercury	mg/L	0.001	< 0.00002	0.00003	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0005	0.0006	0.0016	0.001	0.0002	0.0001	0.0003	0.0001	0.0002	0.0001	0.0003	0.0001	0.0001	< 0.0001	0.0001	0.0002	0.0001	0.0002
Nickel	mg/L	N/A	< 0.01	0.0018	0.0035	0.002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	0.001	<0.001	<0.001	<0.001	0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.535	0.463	0.445	0.384	1.18	1.1	1.19	1.14	1.22	1.16	1.15	1.13	1.22	1.22	1.19	1.2	1.27	1.28
Thallium	mg/L	N/A	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0002	0.0002	<0.0001	0.0001	0.0026	0.0006	0.0017	0.0009	0.0017	0.0003	0.0005	0.0002	< 0.0001	0.0003	0.0003	0.0004	0.0002	0.0003
Zinc	mg/L	5	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.014	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry
Summary - General Water Quality

Parameters	Units	ODWQS	48-96-I 25-Oct-22	48-96-I 2-May-23	48-96-I 18-Oct-23	48-96-I 6-May-24	48-96-I 16-Oct-24	48-96-II 26-May-15	48-96-II 13-Oct-15	48-96-II 25-May-16	48-96-II 12-Oct-16	48-96-II 23-May-17	48-96-II 18-Oct-17	48-96-II 8-May-18	48-96-II 9-May-19	48-96-II 5-May-20	48-96-II 13-Oct-20	48-96-II 4-May-21	48-96-II 13-Oct-21	48-96-II 3-May-22
Alkalinity	mg/L	500	283	288	309	292	285	421	422	287	428	455	428	430	278	417	399	388	431	422
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.24	1.75	0.5	0.3	0.71	0.2	0.15	< 0.01	0.17	0.18	0.17	0.19	0.05	0.12	0.13	0.5	0.51	0.8
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	66.1	69.2	67	68	70.8	151	128	70.4	147	146	140	141	70.9	142	143	135	146	150
COD	mg/L	N/A	< 5	12	23	22	6	6	8	6	< 5	75	208	9	7	490	141	78	23	37
Chloride	mg/L	250	94.6	76.9	64.6	65	58.5	128	130	48.9	123	100	87	117	51.6	116	117	113	116	116
Conductivity	umhos/cm	N/A	770	783	790	786	765	1160	1170	680	1180	1140	1160	1110	682	1140	1120	1060	1110	1170
Cyanide	mg/L	0.2																		
DOC	mg/L	5	0.9	1.2	2.8	3	4	1.3	2.9	1.1	2.8	3.7	3.3	4.1	2.5	4	2.5	4.7	2.9	3.1
Fluoride	mg/L	1.5	< 0.1	0.4	<0.1	0.3	<0.1	0.2	0.2	0.4	< 0.1	0.2	< 0.1	< 0.1	0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	328	340	325	329	336	**545**	479	330	**523**	**534**	**509**	**520**	333	**510**	**515**	498	**519**	**531**
Ion Balance	%	N/A	4.51	0.0556	1.68	0.994	3.55									3.81	5.28	5.17	3.16	5.09
Iron	mg/L	0.3	0.071	< 0.005	0.008	0.034	0.028	**2.6**	**2.75**	< 0.005	**2.83**	**3.04**	**2.98**	**2.85**	0.019	**2.91**	**3.06**	**5.8**	**4.81**	**5.81**
Magnesium	mg/L	N/A	39.7	40.7	38.4	38.7	38.8	40.8	38.9	37.5	38.3	40.8	38.8	40.7	37.8	37.8	38.2	39	37.5	38
Manganese	mg/L	0.05	0.012	< 0.001	0.002	<0.001	0.005	0.039	0.035	< 0.001	0.038	0.04	0.036	0.035	< 0.001	**0.091**	**0.08**	**0.096**	**0.086**	**0.093**
Nitrate	mg/L	10	0.08	0.22	0.1	0.16	<0.05	< 0.1	< 0.1	0.3	< 0.05	< 0.1	< 0.05	< 0.05	0.32	0.08	< 0.05	0.15	< 0.05	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.05	< 0.05	< 0.05	0.1	< 0.05	< 0.05	0.09	< 0.05
Tot Kjel N	mg/L	N/A	0.4	1.4	0.8	0.7	1.1	0.5	0.5	0.2	0.8	0.6	0.6	0.7	1.1	2.9	1.6	1.6	1.5	1.3
pH-Lab	pH unit	6.5-8.5	7.94	8.12	7.72	8.01	8.12	7.4	7.49	7.96	7.67	7.77	7.58	7.76	8.07	7.58	7.51	8.02	7.65	7.72
Phenols	mg/L	N/A	< 0.001	< 0.001	0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.004	0.002	0.002	< 0.001	< 0.002	0.004	< 0.002	< 0.002	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.06	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	3.5	3.7	3.6	3.6	3.5	2.7	2.6	3	2.6	2.6	3.1	3.2	3.3	3	2.9	2.8	3	2.9
Sodium	mg/L	200	32.7	35.1	34.4	35.2	31.7	55.2	43.7	21	57.7	57.2	54.3	57.8	22.4	54.1	50.2	51.2	48.1	47.5
Sulphate	mg/L	500	25	23	19	18	15	6	5	7	5	5	4	6	7	12	7	19	8	7
TDS	mg/L	500	432	421	415	412	400	**639**	**604**	361	**626**	**636**	**588**	**627**	360	**618**	**601**	**600**	**622**	**622**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.04	0.02	0.02	0.04	0.02	0.04	0.03	0.04		0.05	0.06	0.07	0.05	0.08	0.07	0.08	0.06	0.08
Antimony	mg/L	0.006	< 0.0001	< 0.0001	0.0002	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001
Arsenic	mg/L	0.025	0.0002	0.0002	0.0002	0.0002	0.0002	0.0006	0.0003	0.0008		0.0006	0.0005	0.0001	0.0002	0.0016	0.0003	0.0002	0.0001	0.0003
Barium	mg/L	1	**1.13**	**1.1**	**1.07**	**1.22**	**1.09**	0.664	0.603	0.643		0.613	0.662	0.666	0.951	0.588	0.636	0.611	0.686	0.676
Beryllium	mg/L	N/A	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.134	0.144	0.147	0.135	0.13	0.058	0.071	0.068		0.07	0.076	0.076	0.127	0.075	0.081	0.075	0.072	0.069
Cadmium	mg/L	0.005	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002		< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.0002	< 0.0002		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	<0.0001	0.0001	0.0001	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.0001	0.009	< 0.0001	< 0.005	0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0011	0.0006	0.0004	0.0005	0.0007	< 0.0001	0.0002	0.0003		0.0005	0.0006	0.0004	0.0007	0.0003	0.0013	0.0018	0.0002	< 0.0001
Lead	mg/L	0.01	0.00015	0.00004	<0.00002	0.00008	<0.00002	0.00008	< 0.00002	< 0.00002		< 0.00002	0.00002	0.00006	0.00003	0.00004	0.00008	0.0001	< 0.00004	< 0.00004
Mercury	mg/L	0.001	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002		< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0002	0.0002	0.0002	0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	0.0002	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	0.0017	0.0015	0.0017	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.002	< 0.001	0.003		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.002
Silver	mg/L	N/A	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002		< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.31	1.34	1.28	1.3	1.25	0.847	0.775	0.822		0.796	0.773	0.794	1.23	0.774	0.779	0.877	0.882	0.862
Thallium	mg/L	N/A	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	0.0003	0.0002	0.0003	0.0001	0.0034	0.0007	0.0021		0.0021	0.0006	< 0.0001	0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005		< 0.005	0.019	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	48-96-II 25-Oct-22	48-96-II 2-May-23	48-96-II 18-Oct-23	48-96-II 6-May-24	48-96-II 16-Oct-24	49-96-I 26-May-15	49-96-I 13-Oct-15	49-96-I 18-May-16	49-96-I 12-Oct-16	49-96-I 24-May-17	49-96-I 17-Oct-17	49-96-I 7-May-18	49-96-I 11-Oct-18	49-96-I 8-May-19	49-96-I 7-Oct-19	49-96-I 5-May-20	49-96-I 13-Oct-20	49-96-I 4-May-21
Alkalinity	mg/L	500	452	464	450	441	427	281	318	295	330	302	289	287	330	275	306	265	289	291
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.72	2.17	0.61	1.21	0.43	1.11	1.91	1.48	1.99	2.09	2.15	2	2.14	2.05	2.43	1.57	2.16	2.08
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	148	152	138	162	147	16.6	13.8	16.6	15.4	18.6	22.2	22.1	14.9	23.9	26.1	30.8	23.8	25.6
COD	mg/L	N/A	36	52	44	74	316	< 5	< 5	8	< 5	5	6	< 5	12	10	5	10	< 5	13
Chloride	mg/L	250	165	139	115	119	105	97	114	100	136	85.6	89	96	134	102	134	104	121	111
Conductivity	umhos/cm	N/A	1220	1240	1180	1200	1160	913	978	935	1060	967	899	873	1060	913	1010	889	979	928
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.6	2.4	**5.7**	**6.6**	**6.6**	0.5	0.3	0.8	0.7	1.2	1	1.1	1.9	1.7	1.6	1.6	1.1	1.8
Fluoride	mg/L	1.5	< 0.1	< 0.1	<0.1	<0.1	<0.1	1.5	**1.6**	1.5	**2.2**	**1.7**	**1.9**	1.2	0.3	1.2	0.8	0.6	1	< 0.1
Hardness	mg/L	500	**535**	**543**	**504**	**572**	**534**	96	84	93	89	106	129	125	85	126	146	157	133	142
Ion Balance	%	N/A	1.63	1.32	0.107	6.53	5.49											1.6	0.0152	1.62
Iron	mg/L	0.3	**5.67**	**6.01**	**3.67**	**3.82**	**3.61**	< 0.005	0.037	< 0.005	0.044	0.023	0.035	0.046	0.019	0.009	0.05	0.03	0.033	0.016
Magnesium	mg/L	N/A	40.2	39.5	38.8	40.7	40.6	13.4	12.1	12.5	12.4	14.5	18	16.9	11.5	16.1	19.7	19.5	17.9	19
Manganese	mg/L	0.05	**0.091**	**0.101**	**0.064**	**0.085**	**0.062**	< 0.001	0.001	0.002	0.004	0.001	0.002	0.001	0.002	0.002	0.003	0.001	0.004	0.001
Nitrate	mg/L	10	< 0.05	< 0.05	<0.05	<0.05	<0.05	0.9	< 0.1	0.5	0.1	< 0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05	0.58	< 0.05	0.13
Nitrite	mg/L	1	< 0.05	< 0.05	<0.05	<0.05	<0.05	0.3	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	1.5	2.3	2.1	1.3	1.9	1.1	2.2	1.7	2.1	4.1	2.2	2.1	2.3	2.1	2.5	1.8	2.4	2.3
pH-Lab	pH unit	6.5-8.5	7.54	7.67	7.44	7.62	7.9	8.2	8.17	8.13	8.24	8.2	8.16	8.24	8.14	8.24	8.09	8.07	8.14	8.38
Phenols	mg/L	N/A	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.002	0.002	0.002	< 0.001	< 0.002	< 0.002	0.004	0.004	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.04	0.04	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	3	3.2	3.1	3.1	3.1	6.9	6.5	7.4	6.8	6.9	8.1	9.1	7.5	8.1	8.8	8	7.9	8.1
Sodium	mg/L	200	52	56.1	49.9	52.1	47.5	162	169	183	189	159	151	169	**214**	163	156	132	154	153
Sulphate	mg/L	500	8	7	13	6	8	32	20	27	11	22	22	31	12	26	11	30	16	27
TDS	mg/L	500	**693**	**682**	**635**	**646**	**623**	**504**	**528**	**529**	**573**	492	489	**520**	**595**	**507**	**544**	485	**515**	**522**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.09	0.06	0.04	**0.11**	0.04	< 0.01	< 0.01	< 0.01	0.01	< 0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.03
Antimony	mg/L	0.006	0.0002	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0001	0.0003	0.0002	0.0001	0.0002	0.0002	0.0003	0.0001	0.0008	0.0004	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	0.79	0.78	0.739	0.872	0.789	0.018	0.016	0.021	0.018	0.018	0.023	0.02	0.016	0.02	0.023	0.023	0.021	0.021
Beryllium	mg/L	N/A	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.074	0.078	0.077	0.072	0.076	0.623	0.705	0.698	0.71	0.632	0.636	0.67	0.667	0.635	0.594	0.503	0.561	0.515
Cadmium	mg/L	0.005	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0028	< 0.0002	< 0.0002	0.0019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	<0.0001	0.0003	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005
Copper	mg/L	1	0.0004	0.0003	0.0002	0.0004	0.0007	0.0004	0.0015	0.0006	0.0008	0.0019	0.0008	0.0009	< 0.0001	0.0003	0.0008	< 0.0001	0.0005	0.0002
Lead	mg/L	0.01	< 0.00004	0.00007	<0.00002	0.00026	<0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00004	0.00003	0.00005	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0002	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	0.0024	0.0025	0.0029	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	0.002	0.002	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.934	0.95	0.894	0.975	0.901	1.39	1.2	1.32	1.19	1.39	1.54	1.62	1.17	1.58	1.9	1.81	1.75	1.83
Thallium	mg/L	N/A	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	0.0002	<0.0001	0.0003	<0.0001	0.0019	0.0007	0.0005	0.0007	0.0013	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0005	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	49-96-I 13-Oct-21	49-96-I 3-May-22	49-96-I 25-Oct-22	49-96-I 2-May-23	49-96-I 18-Oct-23	49-96-I 6-May-24	49-96-I 16-Oct-24	49-96-II 26-May-15	49-96-II 13-Oct-15	49-96-II 18-May-16	49-96-II 12-Oct-16	49-96-II 24-May-17	49-96-II 17-Oct-17	49-96-II 7-May-18	49-96-II 11-Oct-18	49-96-II 8-May-19	49-96-II 7-Oct-19	49-96-II 5-May-20
Alkalinity	mg/L	500	312	264	294	282	295	277	300	272	268	274	268	276	272	285	279	261	273	259
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	2.33	2.12	2.08	2.45	3.56	2.46	2.92	0.06	0.04	0.02	0.08	0.03	0.03	0.03	0.08	0.06	0.06	0.02
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	25.9	26.2	25.3	33.1	25.4	26.6	29.3	116	113	121	118	113	119	115	120	120	116	134
COD	mg/L	N/A	12	8	< 5	8	11	<5	<5	< 5	< 5	11	< 5	6	6	5	14	6	6	33
Chloride	mg/L	250	120	109	166	136	108	115	128	106	106	108	110	90.9	96.9	105	106	107	116	84.2
Conductivity	umhos/cm	N/A	966	933	1000	984	937	960	979	955	939	959	967	985	926	936	960	956	952	822
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1	1.3	< 0.2	1.1	2.4	2.1	2.5	0.8	0.7	1	1.1	1.5	1.5	1.7	2.5	2.1	2.2	2.8
Fluoride	mg/L	1.5	1	0.6	1.4	1.1	1	0.6	0.7	0.1	0.2	0.2	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	145	142	146	159	146	147	167	431	436	442	439	421	449	435	446	454	438	382
Ion Balance	%	N/A	0.889	3.13	8.17	1.49	0.267	0.794	3.81											4.52
Iron	mg/L	0.3	0.049	0.015	0.02	< 0.005	0.058	0.007	0.035	**0.465**	0.111	0.09	**0.799**	0.046	0.012	0.059	**0.68**	0.011	0.089	< 0.005
Magnesium	mg/L	N/A	19.6	18.6	20.2	18.5	20	19.5	22.7	34.3	37.4	34.1	35.2	33.6	36.8	35.8	35.6	37.4	36.1	11.5
Manganese	mg/L	0.05	0.004	0.002	0.002	< 0.001	0.006	0.001	0.004	**0.061**	0.019	0.006	0.039	0.011	0.008	0.004	0.033	0.017	0.021	< 0.001
Nitrate	mg/L	10	< 0.05	0.46	< 0.05	0.71	0.08	0.15	<0.05	0.1	0.1	0.1	0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.17
Nitrite	mg/L	1	0.1	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.09
Tot Kjel N	mg/L	N/A	2.6	2.3	2.3	2.3	3.7	4	3.3	0.4	0.2	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.6
pH-Lab	pH unit	6.5-8.5	8.11	8.13	8.09	8.18	7.2	8.12	8.31	7.9	7.8	7.77	7.88	7.82	7.87	8	7.92	7.97	7.89	7.86
Phenols	mg/L	N/A	< 0.001	< 0.001	0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.04	0.04	< 0.1
Potassium	mg/L	N/A	8.4	8	8.4	8.1	8.6	8.6	8.6	1.9	2.1	2.1	1.9	1.9	2.2	2.6	2.3	2.5	2.7	0.9
Sodium	mg/L	200	153	149	143	150	146	146	133	27.9	23.7	37.9	37.3	34.2	34.2	35.3	33.5	31.5	38.2	31.2
Sulphate	mg/L	500	21	32	28	30	27	29	24	73	72	70	69	57	60	65	66	67	67	32
TDS	mg/L	500	**539**	**505**	**571**	**547**	498	**511**	**522**	**524**	**516**	**538**	**533**	496	**512**	**530**	**532**	**522**	**541**	449
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.01	0.03	0.03	0.01	<0.01	<0.01	<0.01	0.03	0.03	0.03	0.03	0.03	0.06	0.07	0.06	0.07	0.08	0.08
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0002	< 0.0001	0.0004	0.0005	0.0004	0.0001	0.0003	0.0001	< 0.0001	0.0001
Barium	mg/L	1	0.024	0.025	0.024	0.025	0.022	0.028	0.024	0.119	0.122	0.134	0.126	0.115	0.144	0.13	0.129	0.121	0.128	0.066
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.564	0.523	0.544	0.521	0.574	0.467	0.519	1.33	1.31	1.41	1.3	1.22	1.29	1.11	1.06	1.14	1.12	0.086
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0024	< 0.0002	< 0.0002	0.0014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	<0.0001	<0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.008	0.008	< 0.005	< 0.0001
Copper	mg/L	1	0.0003	0.0003	0.0002	0.0002	0.0002	0.0001	0.0002	< 0.0001	0.0004	0.0005	0.0002	0.0009	0.0003	0.0003	0.0026	0.0006	0.0005	0.001
Lead	mg/L	0.01	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	0.00004	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0001	< 0.0001	0.0002	< 0.0001	<0.0001	<0.0001	<0.0001	0.001	0.0014	0.0017	0.0013	0.0015	0.0012	0.0014	0.0012	0.0011	0.0014	0.0004
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	<0.0002	<0.0002	0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00006	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.95	1.83	1.95	1.77	1.95	1.97	2.09	0.813	0.797	0.814	0.742	0.72	0.697	0.75	0.775	0.814	0.789	0.4
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	0.0002	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0015	0.0006	0.0005	0.0005	0.0007	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	49-96-II 13-Oct-20	49-96-II 4-May-21	49-96-II 13-Oct-21	49-96-II 3-May-22	49-96-II 25-Oct-22	49-96-II 2-May-23	49-96-II 18-Oct-23	49-96-II 6-May-24	49-96-II 16-Oct-24	49-96-III 26-May-15	49-96-III 13-Oct-15	49-96-III 18-May-16	49-96-III 12-Oct-16	49-96-III 24-May-17	49-96-III 17-Oct-17	49-96-III 7-May-18	49-96-III 11-Oct-18	49-96-III 8-May-19
Alkalinity	mg/L	500	249	259	287	277	278	282	288	280	266	286	292	283	278	274	334	311	302	281
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	0.05	0.06	0.07	0.02	0.11	2.02	0.45	0.08	0.42	0.03	0.05	0.04	0.13	0.04	0.04	0.02	0.05	0.06
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	114	113	114	116	104	112	113	115	119	154	151	144	158	128	154	144	167	142
COD	mg/L	N/A	< 5	11	7	9	< 5	9	11	14	5	7	18	43	< 5	11	5	< 5	203	6
Chloride	mg/L	250	111	109	111	108	149	128	118	125	126	135	143	115	131	66.8	93.7	86.7	110	88.8
Conductivity	umhos/cm	N/A	941	911	952	977	974	1000	1010	1030	1010	1030	1060	949	1040	826	929	871	987	884
Cyanide	mg/L	0.2																		
DOC	mg/L	5	1.2	1.4	1.3	1.4	0.5	1.1	2.7	2.6	2.9	0.8	0.9	1.2	1.1	2.3	2.2	2.3	2.8	2.7
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	426	434	428	429	400	423	425	436	448	443	439	407	466	365	434	408	479	404
Ion Balance	%	N/A	1.56	2.43	0.232	1.3	8.31	4.07	1.22	0.582	2.4									
Iron	mg/L	0.3	0.03	0.285	**0.353**	0.2	**0.579**	**0.318**	0.099	0.04	0.138	< 0.005	0.009	< 0.005	0.065	< 0.005	< 0.005	< 0.005	0.211	0.02
Magnesium	mg/L	N/A	34.3	36.9	34.8	33.9	34.1	35	34.6	36.3	36.4	14	14.7	11.7	17.5	10.7	12	11.6	15	12
Manganese	mg/L	0.05	0.012	0.021	0.026	0.013	0.027	0.021	0.008	0.006	0.008	< 0.001	< 0.001	< 0.001	0.003	< 0.001	< 0.001	< 0.001	0.012	0.001
Nitrate	mg/L	10	0.07	0.17	< 0.05	< 0.05	0.07	< 0.05	0.71	<0.05	0.35	0.2	0.2	0.2	< 0.1	0.24	0.15	0.09	0.07	0.11
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.2	0.2	0.3	0.2	0.4	1.8	0.7	<0.1	0.6	0.6	0.3	0.4	0.7	0.4	0.4	0.3	0.9	0.3
pH-Lab	pH unit	6.5-8.5	7.86	8.08	7.91	7.91	7.79	7.96	7.61	7.84	8.1	7.8	7.61	7.71	7.8	7.79	7.81	7.97	7.83	7.96
Phenols	mg/L	N/A	0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.003	0.001	0.003	< 0.001	0.006	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.14
Potassium	mg/L	N/A	2.6	2.5	2.5	2.4	2.5	2.5	2.8	2.5	2.6	1	1.5	0.9	1.3	0.8	1.1	0.9	1.3	0.9
Sodium	mg/L	200	28.6	32.6	38.5	36.2	38.6	33	38.4	36	36.9	33.9	32.7	35.9	37.6	33.6	37.6	35.1	35.3	35
Sulphate	mg/L	500	68	69	68	66	85	75	66	65	60	41	42	34	58	29	30	29	49	35
TDS	mg/L	500	**508**	**519**	**541**	**529**	**581**	**555**	**540**	**551**	**538**	**552**	**561**	**513**	**570**	434	**529**	494	**559**	482
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.07	0.07	0.05	0.07	0.08	0.03	0.04	0.04	0.03	0.04	0.04	0.04	0.1	0.04	0.08	0.07	**0.11**	0.08
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	<0.0001	0.0001	0.0002	< 0.0001	< 0.0001	0.0003	0.0005	0.0003	< 0.0001	0.0002	0.0001
Barium	mg/L	1	0.121	0.113	0.125	0.12	0.125	0.124	0.124	0.143	0.127	0.082	0.096	0.078	0.099	0.067	0.099	0.075	0.095	0.069
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	1.02	0.895	0.848	0.801	0.781	0.773	0.858	0.758	0.696	0.172	0.196	0.1	0.34	0.095	0.111	0.069	0.224	0.079
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0034	< 0.0002	< 0.0002	0.0019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	0.0002	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	0.006
Copper	mg/L	1	0.0003	0.0004	0.0001	0.0007	0.0007	0.0003	0.0004	0.0004	0.0007	0.0007	0.0008	0.0008	0.0006	0.0019	0.0008	0.0007	0.001	0.0008
Lead	mg/L	0.01	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	0.00014	0.00004	< 0.00002	< 0.00002	0.00033	0.00006
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0012	0.0011	0.001	0.0012	0.0011	0.0009	0.0011	0.001	0.001	0.0004	0.0005	0.0007	0.0004	0.0007	0.0005	0.0005	0.0005	0.0004
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0003	0.0003	0.0009	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004	< 0.00002	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.779	0.825	0.798	0.766	0.767	0.819	0.796	0.849	0.798	0.502	0.534	0.455	0.545	0.409	0.403	0.41	0.494	0.421
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.002	0.0005	0.0006	0.0008	0.0012	0.0005	< 0.0001	0.0002	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry
Summary - General Water Quality

Parameters	Units	ODWQS	49-96-III 7-Oct-19	49-96-III 5-May-20	49-96-III 13-Oct-20	49-96-III 4-May-21	49-96-III 13-Oct-21	49-96-III 3-May-22	49-96-III 25-Oct-22	49-96-III 2-May-23	49-96-III 18-Oct-23	49-96-III 6-May-24	49-96-III 16-Oct-24	53-98 26-May-15	53-98 13-Jul-15	53-98 13-Oct-15	53-98 17-May-16	53-98 13-Jul-16	53-98 12-Oct-16	53-98 25-May-17
Alkalinity	mg/L	500	292	243	265	287	306	295	295	296	330	317	331	452	442	433	439	422	397	436
Unionized Ammonia	mg/L	N/A															< 0.01	< 0.01	< 0.01	< 0.01
Ammonia	mg/L	N/A	0.03	1.34	0.04	0.04	< 0.01	< 0.01	0.01	2.93	0.17	<0.05	0.4	0.16	0.19	0.09	0.17	0.18	0.19	0.18
BOD	mg/L	N/A												5		4	2	< 3	< 3	< 3
Calcium	mg/L	N/A	159	69.7	147	130	146	140	139	122	121	136	150	216	237	234	224	236	227	229
COD	mg/L	N/A	18	22	6	12	< 5	8	15	< 5	9	32	12	6	< 5	12	6	< 5	< 5	9
Chloride	mg/L	250	113	167	100	82.9	88.2	86.9	132	94.6	93	99.6	105	**266**	**291**	**297**	**312**	**345**	**347**	**286**
Conductivity	umhos/cm	N/A	960	1050	927	841	877	911	938	889	954	983	1030	1730	1790	1790	1850	1900	1910	1940
Cyanide	mg/L	0.2												< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	2.7	1.4	1.6	2.5	1.8	1.8	0.3	1.9	3.7	3.3	3.6	0.8	0.7	0.7	0.9	0.7	1	1.4
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.1	< 0.1	0.2	0.1	0.2	0.2	< 0.1
Hardness	mg/L	500	464	357	429	373	413	398	398	353	348	394	433	**694**	**760**	**766**	**722**	**755**	**730**	**728**
Ion Balance	%	N/A		3.06	2.47	1.09	3.04	2.61	5.84	4	7.07	0.842	2.03							
Iron	mg/L	0.3	< 0.005	**0.431**	< 0.005	< 0.005	0.095	< 0.005	0.072	< 0.005	<0.005	0.006	<0.005	**0.862**	**0.807**	**0.702**	**1.29**	**1.12**	**0.687**	**1.22**
Magnesium	mg/L	N/A	16.2	44.5	14.9	11.7	11.7	11.8	12.3	11.4	11	13	14.1	37.3	40.6	43.8	39.4	39.9	39.8	38
Manganese	mg/L	0.05	< 0.001	0.009	< 0.001	< 0.001	0.006	< 0.001	0.004	< 0.001	<0.001	<0.001	<0.001	**0.091**	**0.088**	**0.066**	**0.105**	**0.093**	**0.085**	**0.094**
Nitrate	mg/L	10	< 0.05	0.08	0.14	0.22	0.14	0.13	0.18	0.1	0.16	0.07	0.07	0.1	< 0.1	0.2	0.1	< 0.1	< 0.1	< 0.05
Nitrite	mg/L	1	< 0.05	0.15	< 0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05
Tot Kjel N	mg/L	N/A	0.7	1.6	0.3	0.4	0.4	0.3	0.3	3.3	0.4	<0.1	0.6	0.3	0.4	0.5	0.5	0.8	0.4	0.5
pH-Lab	pH unit	6.5-8.5	7.8	7.9	7.79	7.93	7.91	7.85	7.68	7.9	7.53	7.81	7.91	7.59	7.53	7.4	7.68	7.44	7.83	7.55
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.047	< 0.001	0.003
Phosphorus	mg/L	N/A	1.11	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	1.4	6.4	1.2	0.8	1.2	0.9	1.2	1	1	1	1.3	2.5	2.8	3	2.6	2.6	2.6	2.5
Sodium	mg/L	200	37.4	79	28.2	37.3	41.3	37.4	37.5	39	39.9	43.4	46	83	92.5	96	94.7	103	101	106
Sulphate	mg/L	500	56	31	59	39	42	37	57	43	40	39	34	29	30	30	28	30	31	24
TDS	mg/L	500	**558**	**545**	**509**	474	**514**	491	**556**	490	**508**	**524**	**552**	**907**	**960**	**965**	**966**	**1010**	**988**	**949**
TSS	mg/L	N/A												40	16	36	50	14	44	40
Turbidity	NTU	N/A												63.3	11.8	31.2	52	22.6	18.6	65.9
Colour	TCU	5												4	3	3	**14**	**14**	2	2
Aluminum	mg/L	0.1	0.09	0.04	0.07	0.07	0.08	0.07	**0.11**	0.04	0.04	0.05	0.04	0.05	0.05	0.04	0.05	0.05	0.05	0.06
Antimony	mg/L	0.006	< 0.0001	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0004	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	0.0001	< 0.0001	0.0001	0.0001	< 0.0001	0.0001	< 0.0001	0.0001	0.0001	0.0001	0.0002	0.0003	0.0003	0.0003	0.0002	0.0004	0.0016
Barium	mg/L	1	0.098	0.314	0.091	0.065	0.087	0.071	0.088	0.068	0.068	0.089	0.089	0.785	0.86	0.874	0.914	0.81	0.864	0.856
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.306	0.335	0.267	0.066	0.101	0.073	0.099	0.066	0.066	0.077	0.091	0.032	0.041	0.058	0.047	0.022	0.047	0.042
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014
Chromium	mg/L	0.05	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0057	< 0.0002	0.0083	0.0031	< 0.0002	0.0011	< 0.001
Cobalt	mg/L	N/A	< 0.005	0.0001	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001	0.0003	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0006	0.0003	0.002	0.0012	0.001	0.0005	0.001	0.0005	0.0008	0.0011	0.0008	< 0.0001	< 0.0001	0.0009	0.0005	0.0004	0.0005	0.0021
Lead	mg/L	0.01	< 0.00002	0.00002	0.00005	0.00002	0.00014	< 0.00002	0.00014	0.00024	0.00002	0.00004	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003
Molybdenum	mg/L	N/A	0.0005	0.0002	0.0005	0.0005	0.0004	0.0005	0.0004	0.0005	0.0004	0.0004	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0004	0.0005	0.0003	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.53	3.35	0.484	0.421	0.458	0.425	0.449	0.404	0.398	0.462	0.483	1.52	1.74	1.59	1.7	1.43	1.54	1.47
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	<0.0001	<0.0001	<0.0001	0.0032	0.006	0.0027	0.0011	0.0008	0.0005	0.003
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	0.035	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	53-98 19-Jul-17	53-98 18-Oct-17	53-98 8-May-18	53-98 24-Jul-18	53-98 11-Oct-18	53-98 15-Jul-19	53-98 7-Oct-19	53-98 5-May-20	53-98 13-Jul-20	53-98 13-Oct-20	53-98 4-May-21	53-98 5-Jul-21	53-98 5-Jul-21	53-98 13-Oct-21	53-98 3-May-22	53-98 26-Jul-22	53-98 25-Oct-22	53-98 2-May-23
Alkalinity	mg/L	500	425	416	397	383	412	364	369	365	370	369	364	384	383	354	347	375	365	365
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ammonia	mg/L	N/A	0.17	0.19	0.18	0.12	0.12	0.21	0.17	0.18	0.19	0.17	0.18	0.2	0.21	0.17	0.39	0.25	0.22	1.41
BOD	mg/L	N/A	5	< 3	< 3	3	4	< 3	< 3	3	< 3	< 3	6	< 3	< 3	< 3	< 3	< 3	< 3	< 3
Calcium	mg/L	N/A	236	231	237	222	225	245	263	230	261	248	236	258	261	268	254	275	294	258
COD	mg/L	N/A	11	< 5	17	7	8	< 5	< 5	< 5	12	8	< 5	14	18	10	12	10	20	7
Chloride	mg/L	250	**284**	**281**	**357**	**403**	**403**	**412**	**480**	**413**	**466**	**513**	**427**	**451**	**460**	**560**	**450**	**518**	**537**	**497**
Conductivity	umhos/cm	N/A	1990	1980	1820	1940	2010	1990	2020	1980	2120	2230	2030	2240	2240	2320	2160	2370	2520	2160
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	1.3	2.1	1.9	1.4	2.5	2.2	2.1	1.5	4.8	1	2.2	1.9	2.4	1.4	1.4	1.1	< 0.2	0.5
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5	< 1	< 0.1
Hardness	mg/L	500	**744**	**741**	**761**	**706**	**719**	**770**	**826**	**738**	**825**	**796**	**748**	**819**	**828**	**843**	**811**	**867**	**938**	**833**
Ion Balance	%	N/A								1.15	2.73	0.566	1.95	4	4.12	0.251	3.71	2.35	6.85	1.01
Iron	mg/L	0.3	**0.895**	**1.3**	**0.991**	**1.69**	**0.601**	**1.25**	**1.44**	**0.947**	**1.42**	**0.591**	**1.1**	**1.59**	**1.62**	**1.3**	**1.21**	**0.747**	**1.79**	**1.28**
Magnesium	mg/L	N/A	37.3	39.7	40.9	36.7	38	38.3	41.1	39.7	41.9	43	38.5	42.3	42.8	42.2	43	43.7	49.4	45.8
Manganese	mg/L	0.05	**0.099**	**0.094**	**0.113**	**0.093**	**0.0837**	**0.103**	**0.108**	**0.097**	**0.104**	**0.094**	**0.113**	**0.109**	**0.111**	**0.113**	**0.112**	**0.13**	**0.128**	**0.118**
Nitrate	mg/L	10	< 0.05	< 0.05	0.16	< 0.05	< 0.05	< 0.05	< 0.5	0.12	0.5	< 0.05	< 0.5	< 0.05	< 0.05	< 0.05	0.44	< 0.3	< 0.5	< 0.05
Nitrite	mg/L	1	0.07	< 0.05	< 0.05	< 0.05	0.17	< 0.05	< 0.5	< 0.05	0.07	< 0.05	< 0.5	< 0.05	< 0.05	0.53	< 0.3	< 0.3	< 0.5	< 0.05
Tot Kjel N	mg/L	N/A	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.8	0.5	1.6
pH-Lab	pH unit	6.5-8.5	7.54	7.75	7.65	7.62	7.81	7.4	7.73	7.72	7.54	7.67	7.82	7.56	7.59	7.47	7.49	7.51	7.46	7.54
Phenols	mg/L	N/A	0.005	< 0.001	< 0.001	0.011	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.02	0.07	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.7	3.3	3.1	3	2.8	3	3.4	3.2	3.2	3.6	3.1	3.3	3.5	3.5	3.3	3.4	4	3.6
Sodium	mg/L	200	115	115	121	124	117	116	137	117	132	142	127	143	146	148	124	145	170	128
Sulphate	mg/L	500	23	20	29	29	31	29	< 10	28	30	30	25	29	29	33	25	28	25	30
TDS	mg/L	500	**955**	**941**	**1027**	**1049**	**1065**	**1064**	**1148**	**1051**	**1158**	**1202**	**1076**	**1159**	**1175**	**1268**	**1109**	**1239**	**1301**	**1183**
TSS	mg/L	N/A	44	10	48	40	28	16	140	84	16	32	28	24	16	10	23	17	11	50
Turbidity	NTU	N/A	47.8	12.7	245	41.9	28.9	25.2	30.4	96.3	25.5	31.3	24.7	25.1	30.3	20.6	84.8	46.4	24.4	43.9
Colour	TCU	5	< 2	3	< 2	< 2	< 2	< 2	< 2	< 2	3	3	< 2	< 2	< 2	< 2	< 2	< 2	2	< 2
Aluminum	mg/L	0.1	0.06	0.1	0.1	0.09	0.09	0.1	**0.13**	**0.11**	**0.11**	0.09	**0.11**	**0.13**	**0.12**	0.09	0.06	**0.11**	**0.15**	0.07
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0008	0.0015	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0003	< 0.0001	< 0.0003	< 0.0003	< 0.0001	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Barium	mg/L	1	0.857	0.961	0.874	0.832	0.873	0.919	1	0.895	**1.06**	1	0.876	**1.06**	**1.07**	**1.09**	**1.05**	**1.05**	**1.32**	**1.08**
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.043	0.046	0.059	0.043	0.044	0.048	0.051	0.054	0.053	0.055	0.053	0.054	0.055	0.053	0.062	0.052	< 0.005	0.063
Cadmium	mg/L	0.005	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000029	< 0.000029	< 0.000015	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.0001	0.0004	< 0.005	< 0.0001	< 0.005	0.007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0014	0.001	0.0014	0.0001	< 0.0001	0.0011	< 0.0002	< 0.0001	0.0005	0.0015	0.0012	0.0003	0.0004	0.0004	0.0005	0.0007	< 0.0002	0.0018
Lead	mg/L	0.01	0.00008	< 0.00002	0.00005	< 0.00002	< 0.00002	0.00006	< 0.00009	< 0.00004	0.00015	< 0.00009	0.00006	0.00012	0.00013	< 0.00009	< 0.00009	< 0.00009	< 0.00009	0.0001
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0002	0.0001	< 0.0002	< 0.0002	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	0.003	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.003	0.002	0.003	0.002	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.57	1.48	1.59	1.33	1.49	1.5	1.58	1.58	1.62	1.7	1.51	1.72	1.73	1.71	1.7	1.76	1.93	1.84
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0025	0.0024	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0004	< 0.0001	< 0.0004	< 0.0004	< 0.0001	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004
Zinc	mg/L	5	< 0.005	0.016	< 0.005	0.005	< 0.005	0.011	< 0.005	< 0.005	0.007	< 0.005	< 0.005	< 0.005	0.008	< 0.005	< 0.005	0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	53-98 12-Jul-23	53-98 18-Oct-23	53-98 6-May-24	53-98 29-Jul-24	53-98 16-Oct-24	54-98 26-May-15	54-98 13-Oct-15	54-98 11-May-16	54-98 18-Oct-16	54-98 24-May-17	54-98 16-Oct-17	54-98 7-May-18	54-98 11-Oct-18	54-98 10-May-19	54-98 7-Oct-19	55-98-I 26-May-15	55-98-I 13-Jul-15	55-98-I 13-Oct-15
Alkalinity	mg/L	500	369	380	358	369	359	235	238	239	239	245	242	247	214	233	239	237	241	237
Unionized Ammonia	mg/L	N/A	< 0.01	<0.01	<0.01	<0.01	<0.01													
Ammonia	mg/L	N/A	0.21	0.32	<0.05	0.82	0.33	0.05	0.04	0.05	0.04	0.06	0.04	0.05	0.05	0.08	0.04	0.15	0.22	0.18
BOD	mg/L	N/A	< 3		<3	<3	<3											5		4
Calcium	mg/L	N/A	286	297	243	341	334	131	119	105	121	122	125	122	127	123	128	74.9	81.3	71.9
COD	mg/L	N/A	17	17	29	27	29	< 5	< 5	< 5	< 5	5	< 5	5	7	5	< 5	< 5	< 5	< 5
Chloride	mg/L	250	**742**	**834**	**531**	**767**	**791**	32.4	33.3	32.7	33.2	26.8	32.4	34.8	35.7	39.4	39.8	85.9	81.8	86.2
Conductivity	umhos/cm	N/A	2670	2800	2350	2950	2950	715	719	711	729	733	715	698	733	717	721	769	779	774
Cyanide	mg/L	0.2	< 0.005		<0.005	<0.005	<0.005											< 0.005	< 0.005	< 0.005
DOC	mg/L	5	< 0.2	2.9	2.2	0.8	0.9	1.2	1.2	1	1.5	1.4	1.4	1.8	2.5	2.7	2.3	0.8	0.6	0.4
Fluoride	mg/L	1.5	< 1	<0.1	<0.7	<0.1	<0.7	0.1	0.1	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.2	0.2
Hardness	mg/L	500	**885**	**922**	**796**	**1090**	**1050**	410	372	333	378	378	393	383	394	384	400	370	396	375
Ion Balance	%	N/A	8.72	11.2	2.07	1.96	0.967													
Iron	mg/L	0.3	**1.55**	**1.69**	**0.639**	**2.14**	**1.98**	**1.13**	**1.25**	**0.985**	**1.01**	**1.12**	**1.12**	**1.05**	**1.33**	**1.1**	**1.35**	**0.497**	**0.657**	**0.73**
Magnesium	mg/L	N/A	41.4	43.6	46	57.9	52.5	19.9	17.9	17	18.2	17.9	19.7	19	18.5	18.5	19.4	44.4	47	47.6
Manganese	mg/L	0.05	**0.138**	**0.141**	**0.11**	**0.151**	**0.149**	0.033	0.028	0.024	0.028	0.027	0.028	0.025	0.029	0.027	0.029	0.014	0.014	0.013
Nitrate	mg/L	10	< 0.5	<0.05	<0.40	<0.05	<0.40	< 0.1	< 0.1	0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	0.19	< 0.05	0.1	< 0.1	0.1
Nitrite	mg/L	1	< 0.5	<0.05	<0.40	<0.05	<0.40	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1
Tot Kjel N	mg/L	N/A	0.4	0.5	0.2	1.1	0.6	0.2	0.2	0.2	1.7	0.2	0.1	0.2	0.1	0.2	0.2	0.3	0.5	0.3
pH-Lab	pH unit	6.5-8.5	7.53	7.34	7.69	7.62	7.69	7.84	7.83	7.79	8.04	7.86	8.01	7.93	7.88	7.99	7.91	8.08	8.01	7.76
Phenols	mg/L	N/A	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.003	0.001	0.002	< 0.001	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.06	0.04	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	3.7	3.6	3.7	4.4	3.9	1.3	1.1	1	1	1	1.2	1.4	1.2	1.3	1.3	2.6	3.1	3
Sodium	mg/L	200	148	156	134	200	188	8.1	7.3	7.1	7.6	7.4	7.1	7.7	7.3	7.5	7.6	11	11.7	10.4
Sulphate	mg/L	500	32	35	32	31	26	97	96	96	94	74	78	88	90	95	90	42	37	40
TDS	mg/L	500	**1476**	**1560**	**1300**	**1640**	**1650**	432	419	404	419	398	410	422	409	426	431	404	407	404
TSS	mg/L	N/A	26	28	68	43	15											360	70	380
Turbidity	NTU	N/A	40.4	20.9	126	42.6	31.3											418	43.3	197
Colour	TCU	5	< 2	<2	<2	<2	<2											4	5	< 2
Aluminum	mg/L	0.1	**0.12**	**0.14**	0.08	0.09	**0.15**	0.03	0.03	0.04	0.02	0.03	0.06	0.07	0.05	0.07	0.08	0.02	0.02	0.02
Antimony	mg/L	0.006	< 0.0001	<0.0001	<0.0001	0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	< 0.0003	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0003	0.0002	0.0002	0.0003	0.0002	0.0001	0.0001	0.0002	0.0001	0.0002	0.0001	0.0002
Barium	mg/L	1	**1.21**	**1.23**	**1.06**	**1.47**	**1.42**	0.148	0.138	0.131	0.115	0.131	0.152	0.146	0.14	0.14	0.147	0.236	0.275	0.248
Beryllium	mg/L	N/A	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.056	0.044	0.07	0.063	0.057	0.006	0.013	0.018	< 0.005	0.016	0.021	0.02	0.018	0.014	0.023	0.073	0.092	0.098
Cadmium	mg/L	0.005	< 0.000029	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.00002	< 0.00002	< 0.00002
Chromium	mg/L	0.05	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	0.0034	< 0.0002	< 0.0002	< 0.001	< 0.001	0.006	< 0.001	< 0.001	0.001	0.0031	< 0.0002	0.0029
Cobalt	mg/L	N/A	< 0.005	0.0005	0.0004	<0.0001	0.0004	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.008	0.006	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0003	0.0016	0.0012	0.0003	0.0021	< 0.0001	0.0002	< 0.0001	< 0.0001	0.0013	0.0001	0.0002	0.0003	0.0004	< 0.0001	< 0.0001	< 0.0001	0.0003
Lead	mg/L	0.01	< 0.00009	<0.00004	0.00009	0.00004	<0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00017	< 0.00002	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0004	0.0003	0.0009	0.0004	0.0003	0.0004	0.0003	0.0003	0.0003	0.0002	< 0.0001	0.0003
Nickel	mg/L	N/A	< 0.01	<0.0002	<0.0002	0.0004	<0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	0.002	<0.001	<0.001	0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	<0.0001	0.0009	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	1.81	1.75	1.97	2.22	2.08	0.452	0.407	0.418	0.341	0.412	0.377	0.422	0.396	0.439	0.438	1.33	1.5	1.35
Thallium	mg/L	N/A	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0004	<0.0001	<0.0001	<0.0001	0.0001	0.0015	0.0013	0.0006	< 0.0001	0.0008	0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0016	0.0026	0.0011
Zinc	mg/L	5	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

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Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	55-98-I 17-May-16	55-98-I 13-Jul-16	55-98-I 12-Oct-16	55-98-I 24-May-17	55-98-I 19-Jul-17	55-98-I 17-Oct-17	55-98-I 7-May-18	55-98-I 24-Jul-18	55-98-I 11-Oct-18	55-98-I 8-May-19	55-98-I 15-Jul-19	55-98-I 7-Oct-19	55-98-I 5-May-20	55-98-II 13-Jul-20	55-98-II 13-Oct-20	55-98-II 4-May-21	55-98-II 5-Jul-21	55-98-II 13-Oct-21
Alkalinity	mg/L	500	235	240	229	244	238	240	238	228	235	222	226	223	230	233	268	234	263	254
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		0.02
Ammonia	mg/L	N/A	0.12	0.18	0.22	0.19	0.18	0.34	0.21	0.16	0.19	0.2	0.19	0.15	0.18	0.17	1.47	0.21	1.53	1.06
BOD	mg/L	N/A	< 2	< 3	4	< 3	6	< 3	< 3	< 2	3	< 3	< 3	< 3	< 3	< 3	4	< 3	9	3
Calcium	mg/L	N/A	76.6	79	70.1	77.5	79.7	79.1	84.9	73.6	75.7	80.7	82.2	86.1	78.4	82.6	62.2	74.5	72.7	77
COD	mg/L	N/A	9	< 5	< 5	7	18	< 5	11	6	< 5	10	< 5	< 5	13	9	< 5	< 5	25	12
Chloride	mg/L	250	83.6	84.7	88.8	70.8	68.3	77.8	91.1	86.9	88.9	93.5	90	105	95	93.7	146	94.4	184	154
Conductivity	umhos/cm	N/A	773	768	770	798	768	779	756	771	792	777	779	788	794	781	990	810	1120	979
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	1	0.8	1	1.5	1.2	1.3	1.7	1.4	1.7	2	3.7	1.6	1.6	**37.1**	0.8	1.9	1.3	1.3
Fluoride	mg/L	1.5	0.2	0.2	0.3	0.4	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	0.4	0.3
Hardness	mg/L	500	389	386	346	377	388	397	415	373	379	399	391	416	389	401	321	377	362	363
Ion Balance	%	N/A													1.76	3.25	4.34	0.306	1.82	0.189
Iron	mg/L	0.3	**0.425**	**0.736**	**0.489**	**0.695**	**0.571**	**0.582**	**0.573**	**0.659**	**0.748**	**0.487**	**0.664**	**0.709**	**0.654**	**0.816**	0.105	**0.712**	0.128	0.273
Magnesium	mg/L	N/A	48	45.9	41.6	44.7	45.8	48.5	49.4	46.1	46.1	47.9	45.2	48.9	47	47.4	40.2	46.3	43.9	41.6
Manganese	mg/L	0.05	0.011	0.014	0.013	0.015	0.016	0.014	0.016	0.013	0.0132	0.016	0.015	0.014	0.015	0.015	0.01	0.014	0.013	0.015
Nitrate	mg/L	10	0.1	0.2	< 0.1	0.1	0.06	< 0.05	0.08	0.09	< 0.05	< 0.05	< 0.05	< 0.05	0.09	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	< 0.1	0.3	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	< 0.05	0.1
Tot Kjel N	mg/L	N/A	0.2	0.4	0.6	< 0.1	0.3	0.5	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	1.6	0.3	1.7	1.4
pH-Lab	pH unit	6.5-8.5	8.05	7.85	8.13	8	8.01	7.93	7.96	7.94	7.95	7.85	7.77	8.05	7.99	7.83	8	7.94	7.97	7.83
Phenols	mg/L	N/A	< 0.001	0.01	0.003	0.002	0.003	0.003	< 0.001	0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.02	0.02	0.04	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.7	2.8	2.5	2.6	2.8	3.2	3.3	3	2.9	3	3.2	3.3	3	3	7.7	2.9	6.3	5.9
Sodium	mg/L	200	11.6	11.3	12.7	10.7	11	15.5	13.3	11.3	11.4	10.8	13.9	13	10.7	11.2	96.5	10.6	74.2	63.3
Sulphate	mg/L	500	41	38	39	33	31	32	41	37	39	38	36	42	38	39	20	39	32	41
TDS	mg/L	500	406	409	393	388	383	401	426	396	406	408	407	432	411	417	**534**	409	**574**	**537**
TSS	mg/L	N/A	58	168	230	310	37	72	400	45	70	14	18	44	37	42	32	9	116	25
Turbidity	NTU	N/A	30.4	122	96	69	30.3	27.5	412	66	22	21.7	23.8	34.8	25	37.1	21	13.5	43.6	9.3
Colour	TCU	5	< 2	3	6	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Aluminum	mg/L	0.1	0.02	0.02	0.03	0.02	0.04	0.05	0.05	0.04	0.05	0.05	0.05	0.06	0.05	0.06	0.02	0.05	0.06	0.04
Antimony	mg/L	0.006	< 0.0001	< 0.0001	0.0002	0.0001	< 0.0001	0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	0.0002	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	0.0002	0.0003	0.0007	0.0002	0.0004	0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	0.241	0.282	0.226	0.251	0.272	0.273	0.278	0.256	0.262	0.249	0.257	0.267	0.247	0.276	0.199	0.235	0.284	0.184
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.066	0.098	0.085	0.086	0.095	0.104	0.1	0.088	0.084	0.09	0.094	0.11	0.087	0.101	0.384	0.084	0.329	0.343
Cadmium	mg/L	0.005	< 0.00002	< 0.00002	0.00002	< 0.000014	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.0002	0.0011	0.0005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0001	< 0.005	< 0.0001	< 0.005	0.0002	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0001	< 0.0001	0.0001	0.001	0.0009	0.0002	< 0.0001	0.0001	0.0004	0.0004	0.0018	< 0.0001	< 0.0001	0.0002	0.0017	0.0015	0.0003	0.0005
Lead	mg/L	0.01	< 0.00002	< 0.00002	< 0.00002	0.00007	0.00006	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	0.00009	< 0.00002	< 0.00002	0.00004	0.00004	0.00005	0.00005	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0004	0.0002	0.0002	0.0003	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.0009	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.002	0.001
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.29	1.46	1.27	1.32	1.44	1.26	1.48	1.3	1.4	1.38	1.41	1.46	1.42	1.41	2.61	1.38	3.02	2.3
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00007	< 0.00005
Vanadium	mg/L	N/A	0.0003	0.0005	0.0003	0.0005	0.0012	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	55-98-II 3-May-22	55-98-II 26-Jul-22	55-98-II 2-May-23	55-98-II 12-Jul-23	55-98-II 18-Oct-23	55-98-II 6-May-24	55-98-II 29-Jul-24	55-98-II 16-Oct-24	55-98-II 26-May-15	55-98-II 13-Jul-15	55-98-II 13-Oct-15	55-98-II 17-May-16	55-98-II 13-Jul-16	55-98-II 12-Oct-16	55-98-II 24-May-17	55-98-II 19-Jul-17	55-98-II 17-Oct-17	55-98-II 7-May-18
Alkalinity	mg/L	500	231	255	242	247	263	243	265	242	299	280	289	267	274	290	283	282	251	249
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	0.01	< 0.01	0.11	<0.01	0.01	0.01				0.01	1.49	0.08	0.04	0.15	< 0.01	0.02
Ammonia	mg/L	N/A	0.85	1.22	1.34	0.82	1.37	0.97	3.09	1.39	3.59	4.76	4.03	2.67	3.43	4.22	2.29	3.27	1.14	0.71
BOD	mg/L	N/A	4	< 3	< 3	5		<3	5	<3	< 2		7	5	< 3	4	12	4	15	5
Calcium	mg/L	N/A	72.9	71.6	73.9	71.4	62.9	67.5	88.2	73.5	71.3	123	85.9	76.7	95.8	79.9	61.4	71.7	71.8	63.6
COD	mg/L	N/A	< 5	7	10	16	25	11	28	9	< 5	24	7	12	< 5	< 5	< 5	17	6	10
Chloride	mg/L	250	109	120	171	121	157	118	**454**	173	**606**	**853**	**723**	**457**	**778**	**618**	**288**	**549**	**278**	199
Conductivity	umhos/cm	N/A	860	893	1020	875	952	900	1860	1070	2420	3070	2710	1970	2580	2570	1650	2680	1280	1090
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005		<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	1.1	0.7	0.9	< 0.2	1.7	2.2	0.6	1	0.5	< 0.2	< 0.2	0.3	< 0.2	0.6	1	0.2	1.5	1.6
Fluoride	mg/L	1.5	< 0.1	0.2	0.4	< 0.1	<0.1	<0.1	0.7	<0.1	1.5	**1.7**	**1.6**	1.1	**1.8**	**1.9**	1.1	**1.7**	1.3	0.3
Hardness	mg/L	500	363	355	369	339	317	347	**505**	378	428	**733**	**535**	447	**540**	479	322	410	410	316
Ion Balance	%	N/A	2.45	2.74	7.54	2.7	8.72	1.9	0.407	0.646										
Iron	mg/L	0.3	**0.81**	0.234	**0.317**	0.269	0.148	**0.517**	0.1	0.12	**0.373**	0.065	0.164	0.117	0.262	0.014	0.175	0.117	0.046	0.131
Magnesium	mg/L	N/A	43.9	42.8	44.8	39	38.8	43.3	69.1	47.3	60.7	103	77.9	62.1	73.1	68	41	56.2	56	38.1
Manganese	mg/L	0.05	0.012	0.012	0.014	0.012	0.012	0.012	0.009	0.011	0.007	0.005	0.007	0.008	0.011	0.006	0.01	0.009	0.004	0.013
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05	0.06	<0.05	<0.05	0.1	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.5	< 0.05	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.5	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	1.1	1.6	1.7	1.1	1.7	1	3.5	1.6	3.9	5	4.4	3	3.5	4.2	2.5	3.7	1.4	0.9
pH-Lab	pH unit	6.5-8.5	7.84	7.86	7.91	7.94	7.55	8	7.89	8.04	8.02	7.87	7.73	8.12	7.72	8.18	8.04	7.86	7.9	7.98
Phenols	mg/L	N/A	< 0.001	< 0.001	< 0.001	< 0.001	0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.104	0.014	0.002	0.005	0.003	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	4.7	6	4.5	5.3	5.6	4.9	11.6	6.2	13	17.9	15	10.3	12.4	14.1	7.4	11.5	10.4	4.5
Sodium	mg/L	200	34.6	54.6	33.3	40.4	51.4	32.7	183	61.3	**300**	**383**	**288**	**213**	**256**	**308**	162	**251**	157	66.6
Sulphate	mg/L	500	42	34	36	42	36	38	22	34	9	11	12	24	13	10	17	15	21	34
TDS	mg/L	500	447	484	**509**	468	**506**	477	**1020**	**574**	**1250**	**1660**	**1380**	**1010**	**1390**	**1280**	**752**	**1130**	**748**	**557**
TSS	mg/L	N/A	33	135	178	64	11	66	117	30	18	24	26	64	210	23	16	24	12	7
Turbidity	NTU	N/A	9.6	143	45.9	48.1	7.6	25.2	90.7	15.4	5.5	8.8	13.4	23.7	23.7	4.7	7.2	3.7	2.2	1.9
Colour	TCU	5	< 2	< 2	< 2	< 2	<2	<2	<2	<2	< 2	4	< 2	9	< 2	3	< 2	< 2	3	< 2
Aluminum	mg/L	0.1	0.02	0.05	0.02	0.04	0.04	0.02	0.03	0.04	0.02	0.03	0.02	0.02	0.03	0.03	0.02	0.03	0.05	0.04
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	0.0005	0.0002	0.0002	0.0002	0.0001	0.0003
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	0.0106	0.0002	< 0.0005	0.0003	0.0002	0.0009	0.0029	0.0004	0.0001
Barium	mg/L	1	0.159	0.177	0.127	0.148	0.17	0.113	**1.1**	0.289	**1.55**	**2.73**	**1.81**	**1.18**	**1.7**	**1.58**	0.609	**1.29**	0.28	0.203
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.137	0.198	0.123	0.168	0.193	0.111	0.716	0.23	0.939	1.13	1.16	0.696	0.949	1.02	0.533	0.834	0.102	0.237
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000012	0.000073	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000014	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	0.0047	< 0.0002	0.0036	< 0.0002	0.0021	0.0009	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	0.0001	0.0001	<0.0001	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001
Copper	mg/L	1	0.0004	0.0004	0.0001	0.0002	0.0006	0.0002	0.0003	0.0008	0.0006	0.0017	0.002	0.0007	0.0014	0.0012	0.0023	0.0014	0.0001	< 0.0001
Lead	mg/L	0.01	< 0.00002	0.00003	< 0.00004	0.00008	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	0.00005	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0001	0.0001	0.0002	<0.0001	0.0001	<0.0001	0.0001	< 0.0001	< 0.0001	0.0001	0.0002	0.0003	< 0.0001	0.0002	< 0.0001	0.0002	0.0003
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	0.0005	0.0006	<0.0002	<0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	0.001	< 0.001	< 0.001	<0.001	<0.001	0.006	<0.001	< 0.001	< 0.001	< 0.001	**0.019**	0.009	**0.022**	0.004	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001
Strontium	mg/L	N/A	1.98	2.24	1.94	1.91	2.09	1.99	8.41	3.07	10.1	18.6	11.7	8.11	11.1	10.8	4.48	8.74	1.26	1.8
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	0.00009	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0022	0.0034	0.0013	0.0002	0.0007	0.0003	0.0009	0.0015	0.0002	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	55-98-II 24-Jul-18	55-98-II 11-Oct-18	55-98-II 8-May-19	55-98-II 5-Jun-19	55-98-II 15-Jul-19	55-98-II 7-Oct-19	55-98-II 5-May-20	55-98-I 13-Jul-20	55-98-I 13-Oct-20	55-98-I 4-May-21	55-98-I 5-Jul-21	55-98-I 13-Oct-21	55-98-I 3-May-22	55-98-I 26-Jul-22	55-98-I 25-Oct-22	55-98-I 2-May-23	55-98-I 12-Jul-23	55-98-I 18-Oct-23
Alkalinity	mg/L	500	258	272	246		249	254	264	Dry	227	244	242	226	233	243	232	235	242	258
Unionized Ammonia	mg/L	N/A	0.04	0.02		< 0.01	0.03	0.06	< 0.01		< 0.01	0.01		< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	<0.01
Ammonia	mg/L	N/A	1.85	2.28	1	1.19	1.08	1.24	0.03		0.26	1.14	0.17	0.2	0.3	0.19	0.15	1.74	0.23	0.49
BOD	mg/L	N/A	6	8		4	< 3	3	< 3		< 3	5	< 3	< 3	< 3	< 3	< 3	< 3	< 3	
Calcium	mg/L	N/A	64.9	50	87.1		64.3	76.9	118		79.7	60.2	77.6	84.7	84.5	80.8	83.7	82.7	85.2	76.4
COD	mg/L	N/A	7	< 5	7		18	< 5	< 5		< 5	< 5	11	< 5	< 5	< 5	7	< 5	11	14
Chloride	mg/L	250	**474**	**325**	101		**264**	180	109		95.4	168	102	113	101	94.9	101	110	114	124
Conductivity	umhos/cm	N/A	1980	1610	884		1340	1040	935		782	1060	796	822	835	785	825	834	845	837
Cyanide	mg/L	0.2	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
DOC	mg/L	5	1	1.5	1.9		1.3	1.6	1.9		1.1	1.7	1.5	0.9	1.1	0.9	< 0.2	0.6	< 0.2	2.2
Fluoride	mg/L	1.5	1	0.9	< 0.1	< 0.1	0.5	< 0.1	< 0.1		< 0.1	0.2	0.2	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	<0.1
Hardness	mg/L	500	394	284	384		358	372	440		408	317	385	408	405	398	420	408	393	372
Ion Balance	%	N/A							3.06		4.31	5.64	1.31	0.957	1.95	1.61	4.36	0.536	2.69	8.95
Iron	mg/L	0.3	0.056	0.056	**0.684**		< 0.005	0.185	0.057		**0.745**	0.057	**0.835**	**0.903**	**0.887**	**0.758**	**0.861**	**0.801**	**0.911**	**0.775**
Magnesium	mg/L	N/A	56.5	38.7	40.5		48	43.8	35.4		50.7	40.5	46.4	47.7	47.2	47.8	51.3	49	43.8	44
Manganese	mg/L	0.05	0.004	0.0098	0.026		0.005	0.013	0.012		0.013	0.013	0.014	0.016	0.015	0.014	0.016	0.019	0.016	0.014
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05		< 0.05	< 0.05	0.09		< 0.05	< 0.05	0.06	< 0.05	0.07	< 0.05	< 0.05	< 0.05	0.07	<0.05
Nitrite	mg/L	1	< 0.05	0.05	< 0.05		< 0.05	< 0.05	< 0.05		< 0.05	0.09	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05
Tot Kjel N	mg/L	N/A	2.2	2.6	1		1.2	1.3	0.2		0.3	1.4	0.3	0.3	0.4	0.4	0.3	1.6	0.3	0.6
pH-Lab	pH unit	6.5-8.5	7.92	8.01	8.03		7.76	7.99	7.97		7.94	8.05	7.91	7.79	7.73	7.89	7.9	7.91	7.89	7.53
Phenols	mg/L	N/A	0.023	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	0.08		0.11	0.05	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1
Potassium	mg/L	N/A	13.3	9.7	4.4		8.3	7.2	2.7		3.3	5.5	3	3.1	3	3	3.3	3.3	3.2	2.9
Sodium	mg/L	200	**243**	180	40.7		115	74.3	34.6		11.7	60.6	11	11.5	11.1	11.3	12	11.2	11.5	10.1
Sulphate	mg/L	500	13	18	51		30	22	68		40	31	39	45	43	37	39	43	44	45
TDS	mg/L	500	**1023**	**788**	475		**681**	**559**	**526**		418	**515**	425	441	430	422	431	440	448	441
TSS	mg/L	N/A	7	7		1920	255	90	260		12	58	7	19	90	10	11	4	41	10
Turbidity	NTU	N/A	1.4	5.3		1730	38.9	31	247		18.3	8.4	9.9	12.9	47.6	15.2	20.5	10.9	32	5.1
Colour	TCU	5	< 2	< 2		< 2	4	< 2	< 2		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	<2
Aluminum	mg/L	0.1	0.05	0.02	0.05		0.05	0.06	0.07		0.03	0.04	0.05	0.04	0.02	0.06	0.07	0.03	0.06	0.06
Antimony	mg/L	0.006	0.0004	0.0001	< 0.0001		< 0.0001	0.0004	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Arsenic	mg/L	0.025	0.0003	0.0002	0.0001		< 0.0001	< 0.0001	0.0002		< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	0.0001	< 0.0001	0.0001	< 0.0001	<0.0001
Barium	mg/L	1	**1.17**	0.643	0.098		0.507	0.231	0.128		0.26	0.17	0.261	0.276	0.275	0.247	0.289	0.261	0.288	0.248
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001
Boron	mg/L	5	0.762	0.552	0.363		0.639	0.35	1.05		0.095	0.187	0.094	0.099	0.1	0.083	0.016	0.094	0.087	0.083
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015		< 0.000015	< 0.000015	< 0.000015		< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	< 0.000010	<0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001		< 0.001	0.002	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001
Cobalt	mg/L	N/A	< 0.005	< 0.0001	< 0.005		0.0006	< 0.005	< 0.0001		0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002
Copper	mg/L	1	0.0002	0.0011	0.0004		0.0006	< 0.0001	0.0004		0.0045	0.0003	0.0002	< 0.0001	0.0005	0.0019	0.0003	< 0.0001	0.0002	0.0003
Lead	mg/L	0.01	0.00003	< 0.00002	0.00003		0.00005	0.00012	0.00002		0.00004	< 0.00002	0.00003	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	0.00003	<0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002		< 0.00002	< 0.00002	< 0.00002		< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002
Molybdenum	mg/L	N/A	0.0003	0.0002	0.0004		0.0002	0.0001	0.0012		0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0007
Selenium	mg/L	0.01	**0.013**	0.005	< 0.001		0.001	0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Strontium	mg/L	N/A	8.5	5.16	1.85		5.39	2.71	0.833		1.55	2.47	1.42	1.48	1.39	1.45	1.54	1.48	1.45	1.36
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	55-98-I 6-May-24	55-98-II (Dup) 6-May-24	55-98-I 29-Jul-24	55-98-I 16-Oct-24	55-98-II (Dup) 16-Oct-24	56-02-I 26-May-15	56-02-I 13-Oct-15	56-02-I 11-May-16	56-02-I 18-Oct-16	56-02-I 24-May-17	56-02-I 16-Oct-17	56-02-I 7-May-18	56-02-I 11-Oct-18	56-02-I 10-May-19	56-02-I 8-Oct-19	56-02-I 5-May-20	56-02-I 13-Jul-20	56-02-I 13-Oct-20
Alkalinity	mg/L	500	241	241	242	236	234	267	233	260	206	234	226	257	216	232	204	229	258	210
Unionized Ammonia	mg/L	N/A	<0.01	<0.01	<0.01	<0.01	0.02											< 0.01	0.01	< 0.01
Ammonia	mg/L	N/A	0.2	0.18	0.29	0.34	0.38	0.37	0.32	0.38	0.38	0.37	0.37	0.4	0.43	0.44	0.4	0.38	0.35	0.4
BOD	mg/L	N/A	<3	<3	<3	<3	<3											< 3	< 3	< 3
Calcium	mg/L	N/A	79.2	78.4	87.5	85.8	86.3	99.1	83.3	85.1	83.3	89.8	86.6	94.9	86.8	97.1	87.8	90.2	91.7	85.2
COD	mg/L	N/A	19	8	6	6	<5	< 5	11	< 5	25	< 5	5	< 5	66	8	< 5	< 5	8	5
Chloride	mg/L	250	106	107	109	111	110	108	98	112	137	94.9	97	110	125	129	135	118	108	128
Conductivity	umhos/cm	N/A	854	852	844	851	850	917	780	888	836	814	785	855	822	882	815	856	835	823
Cyanide	mg/L	0.2	<0.005	<0.005	<0.005	<0.005	<0.005											< 0.005	< 0.005	< 0.005
DOC	mg/L	5	2	2.1	1.3	1.2	1.3	0.9	0.7	0.9	0.8	1.1	1.1	1.9	1.5	2.4	1.6	1.5	**10.4**	0.9
Fluoride	mg/L	1.5	<0.1	0.1	0.1	<0.1	<0.1	0.2	0.2	0.2	0.2	0.3	< 0.1	< 0.1	< 0.1	0.4	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	389	386	436	415	417	432	366	387	374	400	395	432	383	430	396	408	407	396
Ion Balance	%	N/A	1.06	1.51	4.39	1.62	2.32											2.71	0.651	3.86
Iron	mg/L	0.3	**0.866**	**0.824**	**0.951**	**0.923**	**0.906**	**0.491**	**0.606**	**0.551**	**0.47**	**0.509**	**0.506**	**0.557**	**0.573**	**0.564**	**0.578**	**0.509**	**0.64**	**0.547**
Magnesium	mg/L	N/A	46.5	46.3	52.8	48.8	48.9	44.9	38.4	42.4	40.4	42.6	43.4	47.3	40.5	45.6	42.9	44.3	43.3	44.5
Manganese	mg/L	0.05	0.015	0.015	0.016	0.016	0.016	0.016	0.013	0.013	0.013	0.013	0.013	0.014	0.014	0.013	0.013	0.013	0.013	0.012
Nitrate	mg/L	10	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	0.21	< 0.05	0.08	< 0.05	< 0.05
Nitrite	mg/L	1	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	<0.1	<0.1	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.6	1.1	0.6	0.6	0.6	0.5	0.5
pH-Lab	pH unit	6.5-8.5	7.91	8.18	7.95	8.03	7.98	7.82	7.89	7.78	8.13	7.92	8.03	7.93	7.92	8.03	7.95	7.99	7.86	7.89
Phenols	mg/L	N/A	<0.001	<0.001	0.002	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.003	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.23	0.21	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	3.2	3.2	3.5	2.9	2.9	3.7	3.5	3.4	3.5	3.6	3.9	4.7	3.7	4.1	4.1	4.1	3.8	4.2
Sodium	mg/L	200	11.4	11.3	13.7	11.3	11.3	17.5	15.3	16.1	16.1	16.6	15.1	18.2	15.5	17.5	16.1	16.3	15.7	16.5
Sulphate	mg/L	500	38	38	38	40	40	48	25	44	8	24	20	40	14	41	11	30	31	15
TDS	mg/L	500	451	450	445	449	449	482	404	460	413	413	402	470	417	475	420	441	450	420
TSS	mg/L	N/A	5	11	16	17	11											400	58	162
Turbidity	NTU	N/A	10.6	9.2	15.7	16.9	18.7											213	53.3	126
Colour	TCU	5	<2	<2	<2	<2	<2											< 2	< 2	**16**
Aluminum	mg/L	0.1	0.03	0.03	0.03	0.06	0.05	0.03	0.02	0.02	0.05	0.03	0.05	0.05	**0.19**	0.05	0.06	0.05	0.05	0.04
Antimony	mg/L	0.006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0002	0.0001	0.0001	0.0004	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	0.26	0.256	0.286	0.266	0.267	0.165	0.136	0.136	0.148	0.187	0.19	0.195	0.162	0.19	0.171	0.179	0.185	0.176
Beryllium	mg/L	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.096	0.094	0.105	0.089	0.087	0.071	0.083	0.053	0.094	0.094	0.102	0.097	0.09	0.093	0.1	0.096	0.096	0.102
Cadmium	mg/L	0.005	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	0.0022	0.0034	< 0.0002	< 0.0002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.0002	0.0002	<0.0001	0.0002	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0013	< 0.005	< 0.005	< 0.005	0.0009	< 0.005	0.005
Copper	mg/L	1	<0.0001	<0.0001	0.0005	0.0004	0.0002	< 0.0001	0.0003	< 0.0001	< 0.0001	0.0009	0.0004	0.0002	0.0006	0.0005	< 0.0001	< 0.0001	0.0003	0.0013
Lead	mg/L	0.01	<0.00002	<0.00002	0.00003	0.00003	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	0.00003	0.00004	0.00005	< 0.00002	0.00004	0.00005	0.00007
Mercury	mg/L	0.001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001
Nickel	mg/L	N/A	0.0006	0.0006	<0.0002	<0.0002	<0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.49	1.47	1.54	1.46	1.46	1.69	1.44	1.39	1.48	1.62	1.4	1.73	1.46	1.78	1.61	1.69	1.62	1.74
Thallium	mg/L	N/A	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0013	0.0013	< 0.0001	0.0005	0.0017	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry
Summary - General Water Quality

Parameters	Units	ODWQS	56-02-I 4-May-21	56-02-I 5-Jul-21	56-02-I 13-Oct-21	56-02-I 3-May-22	56-02-I 26-Jul-22	56-02-I 25-Oct-22	56-02-I 2-May-23	56-02-I 12-Jul-23	56-02-I 18-Oct-23	56-02-I 6-May-24	56-02-I (Dup) 6-May-24	56-02-I 29-Jul-24	56-02-I 16-Oct-24	56-02-I (Dup) 16-Oct-24	56-02-II 26-May-15	56-02-II 13-Oct-15	56-02-II 11-May-16	56-02-II 18-Oct-16
Alkalinity	mg/L	500	236	254	215	245	259	227	250	255	240	252	252	257	222	229	270	273	267	260
Unionized Ammonia	mg/L	N/A	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03				
Ammonia	mg/L	N/A	0.38	0.37	0.38	0.61	0.47	0.36	2.11	0.41	0.55	0.43	0.53	0.8	0.53	0.55	0.09	0.1	0.12	0.1
BOD	mg/L	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3		3	<3	<3	<3	<3				
Calcium	mg/L	N/A	86.4	85.7	85.5	100	98.9	97.1	107	100	87.7	95	94.8	108	93.9	93.9	93.7	96.5	81.6	92.1
COD	mg/L	N/A	5	9	< 5	< 5	< 5	6	< 5	14	13	48	33	14	5	8	< 5	11	106	49
Chloride	mg/L	250	121	125	135	126	122	134	161	147	158	149	149	145	135	136	114	118	117	118
Conductivity	umhos/cm	N/A	878	878	825	944	900	904	995	950	881	1010	1020	982	893	892	1060	1060	1050	1040
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		<0.005	<0.005	<0.005	<0.005	<0.005				
DOC	mg/L	5	1.6	1.3	0.9	1.1	0.9	< 0.2	0.5	0.8	2.2	2.1	2.1	1.5	1.1	1.2	0.9	0.9	0.9	1.3
Fluoride	mg/L	1.5	< 0.1	0.2	0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	0.2	0.2
Hardness	mg/L	500	398	392	387	443	441	442	475	424	383	434	432	488	418	417	475	489	438	482
Ion Balance	%	N/A	0.0892	3.37	0.0178	2.47	1.77	4.71	0.51	3.67	7.21	1.49	1.7	4.35	2.95	1.78				
Iron	mg/L	0.3	**0.56**	**0.608**	**0.558**	**0.698**	**0.702**	**0.665**	**0.766**	**0.728**	**0.675**	**0.701**	**0.666**	**0.82**	**0.611**	**0.606**	0.007	0.075	0.018	0.061
Magnesium	mg/L	N/A	44.3	43.3	42.2	46.9	47.2	48.4	50.7	42.3	39.9	47.8	47.6	52.8	44.7	44.3	58.7	60.3	56.9	61.2
Manganese	mg/L	0.05	0.013	0.013	0.013	0.014	0.016	0.015	0.017	0.015	0.017	0.015	0.015	0.018	0.014	0.018	0.014	0.016	0.018	0.012
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.1	0.1	0.05	0.06	<0.05	<0.05	<0.05	0.1	0.1	0.2	0.1
Nitrite	mg/L	1	0.09	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	0.09	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1
Tot Kjel N	mg/L	N/A	0.6	0.5	0.5	0.7	0.7	0.5	2.3	0.6	0.7	0.7	0.6	1.5	0.6	0.6	0.6	0.6	0.9	0.6
pH-Lab	pH unit	6.5-8.5	8.06	7.87	7.74	7.59	7.82	7.86	7.89	7.84	7.48	7.8	7.84	8.01	7.99	7.94	7.92	7.91	7.87	8.08
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	3.9	3.9	3.9	4.1	4.1	4.4	4.5	4.3	3.8	4.4	4.5	4.7	3.9	3.9	3.3	3.7	3	3.5
Sodium	mg/L	200	16.1	16.6	15.6	17.3	18.3	17.5	19.4	18.2	14.5	19.3	19.3	21.8	16.5	16.2	35.1	35	31.5	33.4
Sulphate	mg/L	500	32	35	22	41	39	28	41	43	25	37	37	40	24	24	126	123	124	118
TDS	mg/L	500	446	463	435	485	487	466	**534**	**510**	466	**541**	**543**	**523**	473	472	**594**	**602**	**575**	**583**
TSS	mg/L	N/A	422	118	288	50	250	211	368	660	174	482	494	37	220	174				
Turbidity	NTU	N/A	192	21.4	96.4	57.7	119	88.6	241	297	147	185	212	27.8	52.9	106				
Colour	TCU	5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	<2	<2	<2	3				
Aluminum	mg/L	0.1	0.06	0.05	0.04	0.02	0.06	0.07	0.04	0.05	0.08	0.03	0.04	0.03	0.05	0.07	0.03	0.03	0.02	0.06
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0004	0.001	0.0004	0.0007
Barium	mg/L	1	0.174	0.173	0.173	0.2	0.185	0.2	0.208	0.199	0.164	0.189	0.189	0.201	0.171	0.171	0.05	0.058	0.046	0.059
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.093	0.097	0.097	0.1	0.091	0.025	0.097	0.089	0.087	0.095	0.094	0.101	0.095	0.094	0.051	0.071	0.034	0.078
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0023	0.0041	< 0.0002	< 0.0002
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	0.0011	0.0015	0.0015	0.0015	0.0009	0.001	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.0001	0.0002	0.0005	0.0006	0.0005	0.0002	0.0005	0.0002	0.0004	0.0001	<0.0001	0.0003	0.0004	0.0002	< 0.0001	0.0005	0.0002	0.0003
Lead	mg/L	0.01	0.00003	0.00003	0.00003	0.00003	0.00002	< 0.00002	0.00004	0.00003	0.00015	0.00006	0.00004	0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.002	0.0038	0.0031	0.0031
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0008	0.0009	0.0009	<0.0002	<0.0002	<0.0002	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.7	1.67	1.64	1.75	1.79	1.79	1.91	1.73	1.55	1.91	1.9	1.9	1.68	1.65	1.69	1.8	1.45	1.79
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0015	0.0016	< 0.0001	0.0007
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	56-02-II 24-May-17	56-02-II 16-Oct-17	56-02-II 7-May-18	56-02-II 11-Oct-18	56-02-II 10-May-19	56-02-II 8-Oct-19	57-02-I 26-May-15	57-02-I 13-Jul-15	57-02-I 13-Oct-15	57-02-I 17-May-16	57-02-I 13-Jul-16	57-02-I 12-Oct-16	57-02-I 25-May-17	57-02-I 20-Jul-17	57-02-I 18-Oct-17	57-02-I 8-May-18	57-02-I 24-Jul-18	57-02-I 11-Oct-18
Alkalinity	mg/L	500	262	351	325	324	273	285	301	315	282	302	287	274	315	322	304	320	292	286
Unionized Ammonia	mg/L	N/A										< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Ammonia	mg/L	N/A	0.08	0.16	0.13	0.14	0.17	0.05	0.39	0.44	0.38	0.38	0.35	0.34	0.31	0.28	0.36	0.31	0.38	0.42
BOD	mg/L	N/A							4		5	< 2	< 3	< 3	< 3	< 3	< 3	< 3	2	< 2
Calcium	mg/L	N/A	106	116	104	106	107	110	172	178	147	154	144	120	147	139	159	150	158	172
COD	mg/L	N/A	9	14	< 5	42	50	13	7	< 5	12	16	< 5	< 5	10	10	< 5	18	5	< 5
Chloride	mg/L	250	98.1	103	124	125	158	145	**358**	**320**	**312**	**274**	**279**	195	195	157	226	212	**380**	**456**
Conductivity	umhos/cm	N/A	1140	1040	1080	1120	1090	1070	1820	1710	1670	1640	1550	1270	1400	1300	1630	1260	1720	2060
Cyanide	mg/L	0.2							< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	1.7	3	3	3.1	3.7	3	0.6	0.6	0.4	0.8	0.7	1	1.4	1.6	1.7	2.1	1.3	1.8
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.2	0.3	0.2	0.3	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	**526**	474	456	465	426	459	**602**	**621**	**532**	**549**	497	411	500	472	**553**	**516**	**557**	**596**
Ion Balance	%	N/A																		
Iron	mg/L	0.3	0.057	**0.528**	0.064	0.049	0.051	< 0.005	**0.403**	**0.32**	**0.395**	**0.507**	**0.443**	0.205	**0.449**	**0.361**	**0.481**	**0.382**	**0.43**	**0.517**
Magnesium	mg/L	N/A	63.8	44.8	47.6	48.7	38.6	44.8	42	42.8	40.3	39.6	33.3	27.2	32.3	30.2	37.9	34.4	39.4	40.4
Manganese	mg/L	0.05	0.03	0.027	0.017	0.014	0.013	0.005	0.041	0.039	0.038	0.039	0.034	0.031	0.035	0.032	0.039	0.035	0.036	0.0374
Nitrate	mg/L	10	< 0.05	0.24	< 0.05	< 0.05	0.22	< 0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.21
Tot Kjel N	mg/L	N/A	< 1	0.8	0.9	0.7	1.2	0.6	0.6	0.8	0.8	0.7	0.6	0.5	0.4	0.5	0.5	0.5	0.6	0.6
pH-Lab	pH unit	6.5-8.5	7.98	7.82	8.02	7.88	8.02	7.91	7.7	7.7	7.61	7.98	7.61	8.05	7.77	7.7	7.96	7.73	7.73	7.78
Phenols	mg/L	N/A	< 0.001	0.003	< 0.001	0.008	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	0.073	< 0.001	0.001	0.003	< 0.001	< 0.001	0.007	0.018
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	2.42	0.69	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	3.7	18.8	13.3	10.8	16.3	15.2	3.6	4.1	3.9	3.4	3.3	3	3.1	3.2	4.3	3.8	4.1	4.2
Sodium	mg/L	200	59.4	68.6	67.6	60.7	63.3	61.1	112	114	156	108	124	97.3	85.3	80.7	110	88.3	134	167
Sulphate	mg/L	500	163	67	75	79	76	69	51	50	71	52	64	67	40	38	31	41	44	53
TDS	mg/L	500	**651**	**630**	**626**	**624**	**624**	**616**	**920**	**899**	**899**	**814**	**821**	**674**	**692**	**642**	**752**	**723**	**936**	**1065**
TSS	mg/L	N/A							920	40	374	310	81	16	30	16	88	160	47	14
Turbidity	NTU	N/A							860	27.1	279	193	41.4	9.2	18.5	10.2	48.9	108	44.1	16.4
Colour	TCU	5							6	5	2	2	5	3	< 2	< 2	2	< 2	< 2	< 2
Aluminum	mg/L	0.1	0.03	0.06	0.06	0.06	0.07	0.07	0.05	0.04	0.03	0.04	0.04	0.03	0.04	0.04	0.08	0.08	0.07	0.08
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0009	0.0012	0.0005	0.0003	0.0003	0.0002	0.0005	0.0006	0.0003	0.0004	0.0003	0.0003	0.0009	0.0005	0.0013	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	0.065	0.113	0.083	0.077	0.081	0.088	0.888	0.914	0.69	0.709	0.802	0.546	0.691	0.668	0.839	0.743	0.813	0.857
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.066	0.082	0.069	0.069	0.047	0.066	0.061	0.079	0.074	0.066	0.05	0.063	0.073	0.071	0.086	0.081	0.074	0.068
Cadmium	mg/L	0.005	0.000017	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.0043	< 0.0002	0.0044	0.0018	< 0.0002	0.0007	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	0.0006	0.011	0.012	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	0.013	0.0001
Copper	mg/L	1	0.0018	0.0004	0.0018	0.0008	0.0012	0.0008	< 0.0001	0.0001	0.001	0.0006	0.0003	0.0003	0.0015	0.0012	0.001	< 0.0001	0.001	0.0002
Lead	mg/L	0.01	0.00005	< 0.00002	0.00005	0.00003	0.00002	< 0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00005	< 0.00002	< 0.00002	0.00005	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0039	0.0021	0.0028	0.0024	0.0019	0.0024	< 0.0001	< 0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	< 0.0001	0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.004	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.89	1.21	1.43	1.46	1.31	1.46	3.49	3.76	3.01	2.84	2.93	2.12	2.45	2.48	2.88	2.76	3.03	3.32
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0017	0.0008	0.0002	0.0001	< 0.0001	< 0.0001	0.0023	0.0038	0.0014	0.0006	0.0005	0.0003	0.0015	0.002	0.0016	< 0.0001	0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.014	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry
Summary - General Water Quality

Parameters	Units	ODWQS	57-02-I 15-Jul-19	57-02-I 9-Oct-19	57-02-I 2-May-23	57-02-I 18-Oct-23	57-02-I 6-May-24	57-02-I 16-Oct-24	57-02-II 26-May-15	57-02-II 13-Jul-15	57-02-II 13-Oct-15	57-02-II 17-May-16	57-02-II 13-Jul-16	57-02-II 12-Oct-16	57-02-II 25-May-17	57-02-II 20-Jul-17	57-02-II 18-Oct-17	57-02-II 8-May-18	57-02-II 24-Jul-18	57-02-II 11-Oct-18
Alkalinity	mg/L	500	291	283	Destroyed	Destroyed	Destroyed	Destroyed	330	302	340	244	256	286	220	277	332	253	258	307
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ammonia	mg/L	N/A	0.39	0.46					0.02	0.09	0.02	0.02	0.04	0.02	0.03	0.01	0.01	0.02	0.02	0.03
BOD	mg/L	N/A	< 3	< 3					< 2		3	2	< 3	< 3	< 3	< 3	< 3	< 3	< 2	< 2
Calcium	mg/L	N/A	173	191					146	180	102	163	177	106	225	153	98.9	169	190	177
COD	mg/L	N/A	< 5	< 5					< 5	< 5	9	28	< 5	< 5	16	13	7	22	7	7
Chloride	mg/L	250	**348**	**502**					**293**	**387**	151	**399**	**396**	178	**495**	**320**	148	**645**	**557**	**547**
Conductivity	umhos/cm	N/A	1700	1960					1730	1990	1240	1870	1880	1240	2540	2010	1460	2580	2450	2450
Cyanide	mg/L	0.2	< 0.005	< 0.005					< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	1.3	1.6					0.7	0.6	1.1	0.7	0.6	1.4	0.9	1.3	2.3	1.5	1	1.7
Fluoride	mg/L	1.5	< 0.1	< 0.1					0.1	0.2	0.2	0.1	0.2	0.2	< 0.5	< 0.1	< 0.1	< 0.1	< 1	< 0.1
Hardness	mg/L	500	**587**	**669**					421	**518**	293	471	**508**	303	**640**	435	282	482	**548**	**504**
Ion Balance	%	N/A																		
Iron	mg/L	0.3	**0.476**	**0.579**					< 0.005	< 0.005	0.011	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	0.005	0.007	< 0.005
Magnesium	mg/L	N/A	37.7	46.7					13.5	16.4	9.15	15.4	16	9.42	18.9	12.8	8.39	14.5	17.8	14.9
Manganese	mg/L	0.05	0.041	0.043					0.004	0.006	< 0.001	0.001	0.004	0.004	< 0.001	< 0.001	0.001	0.001	0.001	0.0027
Nitrate	mg/L	10	< 0.05	< 0.5					0.8	0.5	0.7	1	0.6	0.4	1.32	1.39	0.95	0.78	0.71	0.42
Nitrite	mg/L	1	< 0.05	< 0.5					< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.3	< 0.05	< 0.05	< 0.05	< 0.5	< 0.05
Tot Kjel N	mg/L	N/A	0.5	0.6					0.3	0.6	0.5	0.5	0.5	0.3	0.5	0.4	0.4	0.3	0.3	0.4
pH-Lab	pH unit	6.5-8.5	7.53	7.79					7.82	7.85	7.75	7.99	7.81	7.99	7.9	7.89	8.08	7.81	7.83	7.88
Phenols	mg/L	N/A	< 0.002	< 0.002					< 0.001	< 0.001	< 0.001	< 0.001	0.073	< 0.001	0.002	0.004	< 0.001	< 0.001	0.015	0.018
Phosphorus	mg/L	N/A	< 0.01	0.05					< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	3.8	4.9					1	1.5	1.3	1	1.3	1	1.1	1.1	1.4	1.2	1.7	1.5
Sodium	mg/L	200	122	175					197	**222**	172	168	198	154	**235**	**228**	**206**	**276**	**288**	**297**
Sulphate	mg/L	500	40	< 10					90	86	80	79	83	85	75	77	64	86	74	85
TDS	mg/L	500	**901**	**1091**					**942**	**1080**	**724**	**976**	**1030**	**707**	**1180**	**957**	**725**	**1344**	**1283**	**1306**
TSS	mg/L	N/A	11	64					225	520	370	430	540	78	350	154	112	360	24	164
Turbidity	NTU	N/A	11.5	28.2					209	575	292	304	473	57.6	603	60.7	81.5	90.3	40.5	96.8
Colour	TCU	5	< 2	< 2					6	7	3	2	**20**	3	3	< 2	2	< 2	< 2	< 2
Aluminum	mg/L	0.1	0.08	**0.11**					0.04	0.04	0.02	0.04	0.04	0.03	0.06	0.04	0.06	0.07	0.09	0.08
Antimony	mg/L	0.006	< 0.0001	< 0.0001					< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0003	0.0001	0.0001	0.0002	< 0.0001	0.0001	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	< 0.0003					0.0002	0.0002	0.0002	0.0002	< 0.0001	0.0003	0.003	0.0009	0.0009	0.0001	0.0001	0.0001
Barium	mg/L	1	0.818	0.924					0.18	0.221	0.128	0.249	0.204	0.134	0.252	0.189	0.133	0.19	0.205	0.205
Beryllium	mg/L	N/A	< 0.002	< 0.002					< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.076	0.089					0.035	0.049	0.08	0.053	0.02	0.058	0.042	0.053	0.061	0.052	0.053	0.064
Cadmium	mg/L	0.005	< 0.000015	< 0.000029					< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.000014	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	0.002					0.0047	< 0.0002	0.0046	0.0016	< 0.0002	0.0007	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.0004	< 0.005					< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.0001
Copper	mg/L	1	0.0012	< 0.0002					0.0005	0.0014	0.0016	0.0015	0.0011	0.0011	0.003	0.0026	0.0023	0.0005	0.0007	0.0007
Lead	mg/L	0.01	0.00007	< 0.00009					< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00009	< 0.00002	< 0.00002	0.00003	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002					< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0001	< 0.0002					0.0002	0.0002	0.0003	0.0003	0.0005	0.0004	0.0004	0.0002	0.0004	0.0003	0.0006	0.0004
Nickel	mg/L	N/A	< 0.01	< 0.01					< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001					< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001					< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	3.1	3.83					0.374	0.494	0.249	0.482	0.393	0.268	0.582	0.405	0.255	0.445	0.494	0.468
Thallium	mg/L	N/A	< 0.00005	< 0.00005					< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0004					0.0025	0.0039	0.0016	0.0005	0.0004	0.0004	0.0012	0.0017	0.002	< 0.0001	0.0002	0.0002
Zinc	mg/L	5	< 0.005	< 0.005					< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.019	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	57-02-II 15-Jul-19	57-02-II 9-Oct-19	57-02-II 5-May-20	57-02-II 13-Jul-20	57-02-II 13-Oct-20	57-02-II 4-May-21	57-02-II 5-Jul-21	57-02-II 13-Oct-21	57-02-II 3-May-22	57-02-II 26-Jul-22	57-02-II 25-Oct-22	57-02-II 2-May-23	57-02-II 12-Jul-23	57-02-II 18-Oct-23	57-02-II 6-May-24	57-02-II 16-Oct-24	58-I 26-May-15	58-I 13-Jul-15
Alkalinity	mg/L	500	300	314	255	277	326	256	280	300	236	289	339	253	290	326	294	331	354	324
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.01	<0.01		
Ammonia	mg/L	N/A	0.04	0.01	0.02	0.02	0.02	< 0.01	< 0.01	0.03	< 0.01	0.11	0.09	0.91	0.26	0.26	<0.05	0.12	0.04	0.04
BOD	mg/L	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3		<3	<3	< 2	
Calcium	mg/L	N/A	146	153	124	180	165	245	258	238	281	251	165	160	133	120	148	116	122	113
COD	mg/L	N/A	10	6	< 5	11	6	9	13	12	9	108	9	5	14	38	25	10	< 5	< 5
Chloride	mg/L	250	**414**	**431**	**412**	**526**	**502**	**735**	**751**	**761**	**635**	**625**	**456**	**503**	**439**	**431**	**292**	190	18.2	19.3
Conductivity	umhos/cm	N/A	1980	1890	2260	2160	2160	2600	2920	2820	2780	2760	2280	2140	1880	1820	1660	1320	781	730
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		<0.005	<0.005	< 0.005	< 0.005
DOC	mg/L	5	1.3	1.9	1.4	**7.3**	0.9	1.6	1.2	0.6	1	0.8	< 0.2	1	< 0.2	2.6	2.4	1.7	1.9	1.5
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 1	< 0.5	< 1	< 0.1	< 1	<0.1	<0.1	<0.1	0.1	0.1
Hardness	mg/L	500	415	439	357	**515**	479	**707**	**742**	**684**	**802**	**714**	472	452	371	339	417	328	432	412
Ion Balance	%	N/A			5.6	0.329	0.981	2.71	1.04	2.41	4.1	5.76	3.49	4.14	5.22	12.4	1.54	1.84		
Iron	mg/L	0.3	0.016	< 0.005	0.005	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	0.021	0.063	< 0.005	0.099	0.16	<0.005	0.222	**0.402**	0.256
Magnesium	mg/L	N/A	12.1	13.8	11.5	15.9	16.1	22.9	23.7	21.6	23.9	21	14.4	12.7	9.38	9.59	11.8	9.18	30.9	31.4
Manganese	mg/L	0.05	0.002	0.002	0.026	0.001	0.001	0.001	0.001	0.002	< 0.001	0.002	0.005	< 0.001	0.003	0.003	<0.001	0.01	0.023	0.028
Nitrate	mg/L	10	0.54	< 0.5	0.63	0.38	0.27	0.65	0.31	0.08	1.46	0.46	< 0.5	0.62	< 0.5	0.42	0.38	0.19	< 0.1	< 0.1
Nitrite	mg/L	1	< 0.05	< 0.5	0.06	< 0.05	< 0.05	< 0.5	< 0.05	0.53	< 0.5	< 0.3	< 0.5	< 0.05	< 0.5	<0.05	0.05	<0.05	< 0.1	< 0.1
Tot Kjel N	mg/L	N/A	0.2	0.4	0.3	0.4	0.3	0.3	0.2	0.3	0.4	0.6	0.5	1.1	0.6	0.6	0.3	0.3	0.3	0.2
pH-Lab	pH unit	6.5-8.5	7.67	7.95	7.9	7.77	7.8	7.72	7.75	7.6	7.48	7.6	7.74	7.79	7.87	7.57	7.81	7.94	7.77	7.88
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	0.11	0.17	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	1.4	1.5	5.5	1.7	1.7	1.6	2.2	2.1	1.9	2.1	2.1	2	1.9	1.6	1.9	1.6	1.7	2.1
Sodium	mg/L	200	**266**	**282**	**303**	**270**	**299**	**285**	**309**	**336**	**246**	**317**	**312**	**236**	**238**	**209**	163	142	6.6	6.1
Sulphate	mg/L	500	81	47	73	74	72	102	101	107	91	76	89	84	78	83	88	62	49	35
TDS	mg/L	500	**1101**	**1116**	**1082**	**1233**	**1252**	**1545**	**1613**	**1645**	**1421**	**1467**	**1242**	**1149**	**1073**	**997**	**908**	**717**	441	402
TSS	mg/L	N/A	245	255	215	1550	440	260	60	180	86	114	80	41	92	66	47	67	720	84
Turbidity	NTU	N/A	126	197	115	260	200	178	78.9	175	2	95.9	66.8	25.2	53.1	38.5	15.4	46	205	52.9
Colour	TCU	5	< 2	2	< 2	< 2	3	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	2	<2	<2	9	< 2
Aluminum	mg/L	0.1	0.07	0.09	0.07	0.09	0.06	**0.11**	**0.13**	0.09	0.07	0.1	0.1	0.05	0.08	0.08	0.06	0.06	0.03	0.03
Antimony	mg/L	0.006	< 0.0001	0.0001	0.0001	0.0004	0.0001	0.0002	0.0002	0.0002	0.0001	0.0003	0.0002	0.0002	< 0.0001	0.0002	<0.0001	<0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0001	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0001	0.0002	<0.0001	<0.0001	0.001	0.0022
Barium	mg/L	1	0.176	0.209	0.13	0.212	0.213	0.266	0.312	0.314	0.29	0.276	0.209	0.161	0.153	0.149	0.152	0.117	0.208	0.224
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002
Boron	mg/L	5	0.056	0.066	0.039	0.06	0.075	0.063	0.075	0.093	0.08	0.09	0.044	0.07	0.073	0.081	0.083	0.092	0.006	0.018
Cadmium	mg/L	0.005	< 0.000015	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000012	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002
Chromium	mg/L	0.05	< 0.001	0.001	< 0.001	< 0.001	< 0.001	0.006	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0045	< 0.0002
Cobalt	mg/L	N/A	0.0003	< 0.005	< 0.0001	< 0.005	0.007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0005	0.0003	0.0002	< 0.005	< 0.005
Copper	mg/L	1	0.0032	0.0003	0.0014	0.0016	0.0017	0.002	0.001	0.0011	0.0007	0.001	0.0011	0.0022	0.0008	0.0016	0.0006	0.0021	< 0.0001	< 0.0001
Lead	mg/L	0.01	0.00009	< 0.00009	0.00009	0.00022	< 0.00009	< 0.00009	0.00013	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	0.00023	<0.00004	0.00002	<0.00002	< 0.00002	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0004	0.0005	0.0004	0.0005	0.0004	0.0005	< 0.0002	0.0003	< 0.0002	0.0003	< 0.0002	< 0.0002	0.0002	0.0005	0.0001	0.0002	0.0003	0.0002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.001	0.0007	0.0004	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.003	0.004	<0.02	0.004	0.005	0.002	< 0.001	0.002	<0.001	<0.001	<0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.38	0.402	0.353	0.488	0.516	0.761	0.812	0.764	0.859	0.829	0.606	0.6	0.48	0.427	0.613	0.456	0.743	0.762
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	0.00012	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0001	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0001	0.0002	<0.0001	<0.0001	0.0027	0.0037
Zinc	mg/L	5	0.009	< 0.005	< 0.005	0.009	< 0.005	< 0.005	0.009	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	58-I 13-Oct-15	58-I 25-May-17	58-I 20-Jul-17	58-I 18-Oct-17	58-I 8-May-18	58-I 24-Jul-18	58-I 11-Oct-18	58-I 16-Jul-19	58-I 9-Oct-19	58-I 5-May-20	58-I 13-Jul-20	58-I 13-Oct-20	58-I 4-May-21	58-I 5-Jul-21	58-I 13-Oct-21	58-I 3-May-22	58-I 26-Jul-22	58-I 25-Oct-22
Alkalinity	mg/L	500	348	382	356	333	444	326	391	363	349	**538**	487	471	**593**	**628**	**581**	**542**	**621**	**593**
Unionized Ammonia	mg/L	N/A		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Ammonia	mg/L	N/A	0.02	0.03	0.03	0.03	0.03	0.03	0.04	0.05	0.03	0.03	0.03	0.04	0.04	0.02	0.05	< 0.01	0.19	< 0.01
BOD	mg/L	N/A	2	4	< 3	< 3	< 3	< 2	< 2	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
Calcium	mg/L	N/A	117	130	121	107	163	109	111	144	130	240	197	150	312	250	236	373	265	244
COD	mg/L	N/A	< 5	7	< 5	< 5	22	7	6	< 5	< 5	30	28	21	26	29	28	18	33	31
Chloride	mg/L	250	20.7	< 0.1	25.1	24.7	41.3	42.6	49.1	54.1	71.6	97.7	79.1	84.6	**344**	197	194	**411**	209	148
Conductivity	umhos/cm	N/A	775	849	829	795	993	814	959	937	916	1360	1200	1210	2040	1730	1690	2440	1750	1620
Cyanide	mg/L	0.2	< 0.005	**20**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	1.6	2	2	3	**5.8**	2.5	4.9	4.2	3.5	**9.8**	**13.9**	4.8	**5.2**	**6.7**	4.3	3.1	4.9	2.7
Fluoride	mg/L	1.5	0.2	< 0.005	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1
Hardness	mg/L	500	441	470	441	405	**551**	418	413	**523**	490	**771**	**705**	**582**	**991**	**854**	**770**	**1160**	**891**	**792**
Ion Balance	%	N/A							7.99			6.04	5.26	3.33	2.2	1.24	1.98	2.2	2.26	4.05
Iron	mg/L	0.3	**0.732**	**0.618**	**0.945**	**0.749**	**0.388**	**0.98**	**0.425**	0.194	**1.82**	**0.372**	**1.5**	**0.997**	0.129	**1.61**	0.093	**0.364**	**1.74**	**1.08**
Magnesium	mg/L	N/A	36	35.1	33.6	33.4	35	35.3	33	39.6	40.2	41.5	51.6	50.5	51.4	55.6	43.7	55.5	55.5	44.3
Manganese	mg/L	0.05	0.023	0.029	0.029	0.025	0.025	0.028	0.0319	0.036	0.034	0.03	0.047	0.03	0.034	**0.053**	0.02	0.046	**0.06**	0.041
Nitrate	mg/L	10	< 0.1	< 0.05	< 0.05	0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	0.54	0.08	< 0.5	0.05	< 0.05	0.36	0.07	< 0.05
Nitrite	mg/L	1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	< 0.05	< 0.05	< 0.3	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.2	< 0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.6	0.4	0.5	0.8	0.6	0.7	0.5	1.1	0.7
pH-Lab	pH unit	6.5-8.5	7.64	7.76	7.81	8.07	7.65	7.87	7.88	7.51	7.82	7.55	7.53	7.67	7.35	7.44	7.42	7.28	7.24	7.22
Phenols	mg/L	N/A	< 0.001	0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.05	0.04	0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.1	1.8	2	2.5	2.1	2.2	2.5	2.5	2.5	2.5	2.7	2.9	2.7	3.5	3.8	3	4.3	3.6
Sodium	mg/L	200	6.3	7.1	8.2	7.7	16.5	7.6	8.9	12.1	9.3	30	14	10.9	55.6	41.5	54.1	72.1	59.6	68
Sulphate	mg/L	500	40	40	38	29	64	42	51	49	47	66	65	61	84	68	70	136	65	69
TDS	mg/L	500	432	464	442	405	**588**	435	490	**520**	**512**	**801**	**703**	**643**	**1206**	**994**	**951**	**1376**	**1034**	**933**
TSS	mg/L	N/A	364	92	37	58	90	156	54	20	580	72	108	55	38	68	110	40	197	36
Turbidity	NTU	N/A	59.7	33.4	29.6	25.4	32	142	25.9	17.9	38.4	21	59.8	57.2	32.8	126	86.3	33.5	43.9	59.4
Colour	TCU	5	< 2	< 2	3	2	< 2	< 2	2	< 2	< 2	< 2	2	3	3	2	4	< 2	3	4
Aluminum	mg/L	0.1	0.03	0.04	0.04	0.06	0.08	0.06	0.06	0.07	0.08	0.1	0.09	0.06	**0.12**	**0.13**	0.08	0.09	**0.12**	**0.12**
Antimony	mg/L	0.006	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0002	< 0.0001	0.0001	0.0002
Arsenic	mg/L	0.025	0.0019	0.0015	0.0014	0.0019	0.0007	0.0015	0.0009	0.0006	0.0017	0.0006	0.0013	0.001	0.0005	0.0007	0.0004	< 0.0003	0.0009	0.0009
Barium	mg/L	1	0.251	0.225	0.258	0.275	0.219	0.264	0.259	0.279	0.328	0.283	0.352	0.343	0.371	0.339	0.314	0.325	0.289	0.286
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.03	0.022	0.028	0.038	0.034	0.032	0.043	0.036	0.047	0.05	0.043	0.049	0.069	0.065	0.1	0.091	0.087	0.054
Cadmium	mg/L	0.005	< 0.00002	< 0.000014	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000012
Chromium	mg/L	0.05	0.0039	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	0.0003	0.014	0.0002	0.0004	< 0.005	0.0005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005
Copper	mg/L	1	0.0001	0.0009	0.0009	0.0006	0.0014	0.0004	0.0005	0.0008	0.0001	0.0004	0.0006	0.0016	0.0017	0.0007	0.0009	0.0009	0.0013	0.0006
Lead	mg/L	0.01	< 0.00002	0.00002	0.00007	< 0.00002	0.00005	0.00003	0.00002	< 0.00002	0.00003	< 0.00004	0.00009	0.00005	**0.0123**	0.00008	< 0.00004	< 0.00009	< 0.00004	< 0.00004
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0005	0.0004	0.0005	0.0005	0.0004	0.0004	0.0004	0.0008	0.0003	0.0002	0.0003	0.0002	0.0001	0.0002	0.0003	< 0.0002	0.0003	0.0003
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.005	0.003	0.002	<0.02	0.004	0.002
Silver	mg/L	N/A	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.756	0.793	0.805	0.737	0.772	0.772	0.75	0.901	0.9	1.07	1.15	1.15	1.37	1.38	1.15	1.47	1.37	1.16
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0013	0.0024	0.0018	0.0019	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0004	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	0.012	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.011	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	58-I 2-May-23	58-I 12-Jul-23	58-I 18-Oct-23	58-I 6-May-24	58-I 29-Jul-24	58-I 16-Oct-24	59-05 26-May-15	59-05 13-Oct-15	59-05 25-May-16	59-05 12-Oct-16	59-05 23-May-17	59-05 18-Oct-17	59-05 7-May-18	59-05 11-Oct-18	59-05 9-May-19	59-05 8-Oct-19	59-05 5-May-20	59-05 13-Oct-20
Alkalinity	mg/L	500	**562**	**547**	**556**	**530**	**519**	494	359	368	388	401	424	444	461	471	450	460	471	463
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	<0.01	<0.01	<0.01	<0.01												
Ammonia	mg/L	N/A	3.74	0.07	0.16	0.12	0.25	0.14	2.46	2.47	2.44	3.3	3.91	5.09	4.61	4.99	5.94	7.47	6.84	7.2
BOD	mg/L	N/A	< 3	< 3		<3	<3	<3												
Calcium	mg/L	N/A	311	232	203	245	219	212	124	110	126	134	142	146	148	158	161	166	156	158
COD	mg/L	N/A	15	25	20	30	25	13	18	31	38	9	50	95	19	33	23	23	25	28
Chloride	mg/L	250	**278**	170	159	191	103	111	147	155	159	162	141	155	175	186	198	194	182	190
Conductivity	umhos/cm	N/A	2100	1660	1570	1730	1380	1380	1130	1160	1210	1270	1290	1330	1350	1430	1440	1420	1440	1470
Cyanide	mg/L	0.2	< 0.005	< 0.005		<0.005	<0.005	<0.005												
DOC	mg/L	5	1.7	1	**6.4**	**5.2**	4.1	3.2	1.4	3.3	2.9	3	4.3	5	**5.1**	**5.2**	**6.1**	**5.2**	4.5	3.1
Fluoride	mg/L	1.5	< 0.1	< 1	<0.1	<0.1	<0.1	<0.1	0.1	0.2	0.2	0.2	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	**961**	**700**	**621**	**740**	**664**	**638**	417	380	423	449	472	494	500	**526**	**534**	**558**	**525**	**528**
Ion Balance	%	N/A	1.42	4.77	9.04	1.32	3.19	2.62											4.94	1.67
Iron	mg/L	0.3	0.24	0.035	0.126	0.053	0.051	0.062	**4.24**	**4.25**	**4.92**	**5.38**	**5.86**	**6.81**	**6.59**	**8.04**	**7.48**	**8.74**	**8.2**	**8.44**
Magnesium	mg/L	N/A	44.7	29.2	27.5	31.3	28.6	26.3	25.7	25.7	26.3	27.8	28.8	31.5	31.6	31.9	31.9	34.7	32.8	32.3
Manganese	mg/L	0.05	0.041	0.017	0.024	0.027	0.019	0.029	**0.053**	0.049	**0.056**	**0.063**	**0.066**	**0.07**	**0.065**	**0.076**	**0.072**	**0.075**	**0.07**	**0.072**
Nitrate	mg/L	10	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	0.61	< 0.05	< 0.05	0.18	< 0.05	0.07	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.17	< 0.05
Tot Kjel N	mg/L	N/A	4.3	0.5	0.5	0.4	0.7	0.5	3	4	3	4.1	3.8	6.1	5.4	5.9	7.1	8.9	7.8	8.5
pH-Lab	pH unit	6.5-8.5	7.4	7.52	7.5	7.49	7.66	7.65	7.75	7.56	7.61	7.61	7.66	7.64	7.72	7.7	7.74	7.57	7.54	7.45
Phenols	mg/L	N/A	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.005	< 0.001	0.01	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.35	0.3	< 0.1	< 0.1
Potassium	mg/L	N/A	2.9	2.8	2.7	2.5	2.8	2.5	2.7	2.7	2.6	2.8	3.1	4.1	4.2	4	4.3	5	4.5	4.4
Sodium	mg/L	200	78.2	73.4	71.5	69.8	68.6	60	87.6	75.8	91.4	97.1	101	102	107	109	109	111	105	91.7
Sulphate	mg/L	500	204	156	149	115	100	79	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
TDS	mg/L	500	**1257**	**992**	**856**	**949**	**751**	**747**	**608**	**594**	**644**	**674**	**681**	**719**	**755**	**785**	**790**	**806**	**780**	**763**
TSS	mg/L	N/A	15	64	22	76	53	82												
Turbidity	NTU	N/A	32.7	53.3	5.3	58.9	32.7	51.7												
Colour	TCU	5	< 2	3	3	2	2	2												
Aluminum	mg/L	0.1	0.08	**0.12**	**0.11**	0.08	0.08	0.09	0.03	0.03	0.03	0.07	0.04	0.08	0.07	0.07	0.08	0.09	0.08	0.07
Antimony	mg/L	0.006	0.0001	< 0.0001	0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	0.0005	0.0003	0.0005	0.0003	0.0003	0.0004	0.0006	0.0003	0.0005	0.0005	0.0008	0.0006	0.0001	< 0.0001	< 0.0001	< 0.0003	< 0.0001	< 0.0001
Barium	mg/L	1	0.209	0.155	0.133	0.186	0.142	0.138	0.591	0.525	0.565	0.573	0.654	0.785	0.788	0.774	0.833	0.909	0.821	0.872
Beryllium	mg/L	N/A	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.101	0.108	0.128	0.168	0.189	0.197	0.072	0.092	0.094	0.099	0.099	0.114	0.106	0.108	0.105	0.11	0.11	0.116
Cadmium	mg/L	0.005	< 0.000029	< 0.000012	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	0.000199	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.0002	< 0.0002	0.0021	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.007	< 0.005	0.0007	0.0008	0.0004	0.0008	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	< 0.005	< 0.005	< 0.005	0.0002	< 0.005
Copper	mg/L	1	0.0007	0.002	0.0014	0.0007	0.0012	0.0014	0.0001	0.0005	0.0006	0.0004	0.0008	0.0006	0.0007	0.0002	0.001	0.0004	0.0026	0.0013
Lead	mg/L	0.01	< 0.00009	< 0.00004	0.00004	<0.00004	0.00007	<0.00002	0.00007	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00004	0.00003	< 0.00009	0.00015	0.00005
Mercury	mg/L	0.001	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0003	0.0004	0.0003	0.0002	0.0003	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	0.0019	0.0019	0.0023	0.0018	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	0.003	0.002	<0.001	<0.001	0.002	<0.001	0.001	< 0.001	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.24	0.91	0.801	1.01	0.84	0.806	0.531	0.455	0.51	0.502	0.56	0.519	0.586	0.587	0.646	0.662	0.629	0.628
Thallium	mg/L	N/A	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0004	< 0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0029	0.0008	0.0021	0.0009	0.0025	0.0007	0.0002	0.0002	0.0002	< 0.0004	0.0003	0.0002
Zinc	mg/L	5	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.014	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry
Summary - General Water Quality

Parameters	Units	ODWQS	59-05 4-May-21	59-05 13-Oct-21	59-05 3-May-22	59-05 25-Oct-22	59-05 2-May-23	59-05 18-Oct-23	59-05 6-May-24	59-05 16-Oct-24	60-05 26-May-15	60-05 13-Oct-15	60-05 25-May-16	60-05 12-Oct-16	60-05 23-May-17	60-05 18-Oct-17	60-05 11-Oct-18	60-05 9-May-19	60-05 8-Oct-19	60-05 5-May-20
Alkalinity	mg/L	500	500	**540**	**543**	**560**	**591**	**624**	**598**	**597**	310	307	299	303	296	303	306	291	291	295
Unionized Ammonia	mg/L	N/A																		
Ammonia	mg/L	N/A	9.6	14.6	1.84	21.5	18.5	24.3	21	21.5	0.09	0.18	0.12	0.13	0.09	0.1	0.1	0.11	0.09	0.06
BOD	mg/L	N/A																		
Calcium	mg/L	N/A	147	155	162	155	159	164	165	177	115	104	114	119	117	118	118	115	105	114
COD	mg/L	N/A	29	19	34	23	33	39	38	34	17	38	72	< 5	68	42	21	18	10	< 5
Chloride	mg/L	250	195	196	209	**262**	240	211	210	204	122	128	125	127	103	111	129	139	136	123
Conductivity	umhos/cm	N/A	1470	1530	1710	1700	1770	1780	1800	1760	991	992	972	994	956	960	981	988	974	969
Cyanide	mg/L	0.2																		
DOC	mg/L	5	4.5	3.2	4.3	1.7	3.6	**6.9**	**8.6**	**9.4**	0.8	1	1.1	1.3	1.6	2.4	2.9	3	2.4	2
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.1	0.1	0.2	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	**508**	**531**	**548**	**535**	**549**	**560**	**568**	**604**	446	424	448	467	454	469	461	449	431	448
Ion Balance	%	N/A	2.65	3.36	1.28	1.11	3.42	2.99	0.67	1.04										4.54
Iron	mg/L	0.3	**8.52**	**9.25**	**10.5**	**10.4**	**11.7**	**12.6**	**12.9**	**13.6**	**1.29**	**0.944**	**0.714**	**1.38**	**0.467**	**1.17**	**0.966**	**0.772**	**0.937**	**1.83**
Magnesium	mg/L	N/A	34.2	34.9	34.8	35.8	36.6	36.6	37.9	39.1	38.9	39.7	39.3	41.1	39.3	42.4	40.3	39.4	41.1	39.7
Manganese	mg/L	0.05	**0.068**	**0.071**	**0.074**	**0.071**	**0.077**	**0.078**	**0.078**	**0.08**	0.03	0.032	0.039	0.037	0.048	0.037	0.034	0.041	0.014	**0.053**
Nitrate	mg/L	10	0.16	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	0.1	0.1	0.1	0.1	0.1	< 0.05	< 0.05	0.21	< 0.05	0.09
Nitrite	mg/L	1	< 0.05	0.11	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.13
Tot Kjel N	mg/L	N/A	11.5	17.4	24.3	24.3	24.1	27.6	21.3	26.2	0.4	1.5	1.1	0.6	0.6	0.6	0.4	0.5	0.3	0.3
pH-Lab	pH unit	6.5-8.5	7.76	7.55	7.67	7.4	7.64	7.47	7.6	7.66	7.79	7.77	7.75	7.9	8.04	7.93	7.91	8.02	7.86	7.79
Phenols	mg/L	N/A	< 0.002	0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	0.003	0.002	0.003	0.004	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.72	0.25	< 0.1
Potassium	mg/L	N/A	5.2	6.5	7.3	7.9	8.4	8.3	8.4	8.2	2.6	2.9	2.6	2.8	2.4	3.5	3	2.7	3	2.7
Sodium	mg/L	200	113	119	123	120	128	122	124	116	31.1	28.6	32.6	35	33.6	34.7	35.8	35.9	36	35.7
Sulphate	mg/L	500	< 1	< 1	< 1	< 1	< 1	3	<1	1	20	21	21	20	18	17	21	24	18	18
TDS	mg/L	500	**815**	**864**	**875**	**955**	**938**	**977**	**986**	**967**	**517**	**511**	**517**	**529**	492	**510**	**531**	**531**	**515**	**512**
TSS	mg/L	N/A																		
Turbidity	NTU	N/A																		
Colour	TCU	5																		
Aluminum	mg/L	0.1	0.08	0.06	0.09	0.09	0.04	0.06	0.05	0.05	0.03	0.02	0.03	0.06	0.04	0.07	0.06	0.07	0.07	0.08
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	<0.0001	<0.0001	<0.0001	0.0003	0.0004	0.0003	0.0006	0.0006	0.0005	0.0002	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	0.867	**1.04**	**1.13**	**1.26**	**1.26**	**1.23**	**1.45**	**1.29**	0.221	0.212	0.216	0.226	0.205	0.242	0.219	0.208	0.213	0.211
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.103	0.105	0.108	0.103	0.11	0.113	0.102	0.101	< 0.005	0.024	0.019	0.025	0.019	0.026	0.022	0.015	0.023	0.02
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.0002	< 0.0002	0.0013	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0004	0.0008	0.0007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.012	0.008	< 0.005	0.0008
Copper	mg/L	1	0.0012	0.0003	< 0.0001	0.0006	0.0006	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0042	0.0008	0.0004	0.0008	0.0004	0.0002
Lead	mg/L	0.01	0.00005	< 0.00004	< 0.00004	< 0.00004	< 0.00004	<0.00004	<0.00002	<0.00002	0.00005	< 0.00002	< 0.00002	0.00003	0.00023	0.00005	0.00002	0.00002	< 0.00002	0.00007
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	0.00006	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0001	0.0001	< 0.0001	0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.002	0.0023	0.0021	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	0.001	0.002	0.002	0.001	0.003	0.001	<0.001	<0.001	< 0.001	< 0.001	0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	0.64	0.685	0.691	0.705	0.751	0.732	0.777	0.76	0.599	0.56	0.566	0.565	0.566	0.515	0.536	0.574	0.553	0.548
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0003	0.0002	0.0004	0.0004	0.0009	0.0005	0.0005	0.0005	0.0015	0.0005	0.0013	0.0005	0.0015	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	0.007	< 0.005	0.022	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	60-05 13-Oct-20	60-05 4-May-21	60-05 13-Oct-21	60-05 3-May-22	60-05 25-Oct-22	60-05 2-May-23	60-05 18-Oct-23	60-05 6-May-24	60-05 16-Oct-24	61-10-I 26-May-15	61-10-I 13-Jul-15	61-10-I 13-Oct-15	61-10-I 25-May-16	61-10-I 13-Jul-16	61-10-I 17-Oct-16	61-10-I 25-May-17	61-10-I 20-Jul-17	61-10-I 18-Oct-17
Alkalinity	mg/L	500	286	284	310	289	302	301	321	300	296	397	394	398	385	389	401	400	390	408
Unionized Ammonia	mg/L	N/A														< 0.01			< 0.01	
Ammonia	mg/L	N/A	0.11	0.09	0.1	0.08	0.17	2.04	0.96	0.07	0.18	0.37	0.39	0.35	0.37	0.39	0.4	0.38	0.36	0.42
BOD	mg/L	N/A												5		< 3			< 3	
Calcium	mg/L	N/A	104	106	99.3	107	97.6	101	100	97.5	103	112	121	125	112	113	115	114	111	116
COD	mg/L	N/A	10	16	10	13	10	19	15	41	25	18	17	11	16	10	13	20	20	18
Chloride	mg/L	250	124	129	129	127	172	144	126	129	122	85.1	82.3	83.6	77.2	79	85.4	68.9	67.4	68.8
Conductivity	umhos/cm	N/A	966	942	965	993	998	1010	1020	1010	993	1010	1020	994	947	987	1020	1000	999	1080
Cyanide	mg/L	0.2											< 0.005	< 0.005		< 0.005			< 0.005	
DOC	mg/L	5	1.5	2.2	1.5	1.6	0.6	2.2	2.8	2.8	3.7	2.9	2.7	3.7	4.6	4.7	**5.2**	**5.9**	**5.6**	**5.8**
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	0.2	0.2	0.2	0.2	0.2	0.2	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	419	435	411	419	403	412	406	402	420	467	498	**536**	464	472	480	471	466	492
Ion Balance	%	N/A	0.513	3.29	1.52	1.5	7.8	2.55	2.32	0.461	2.52									
Iron	mg/L	0.3	**0.404**	0.23	0.094	0.272	0.237	**0.61**	**0.671**	0.124	**0.441**	0.073	0.064	0.145	0.073	0.069	0.068	0.086	0.08	0.117
Magnesium	mg/L	N/A	38.6	41.3	39.6	36.8	38.8	38.6	38	38.5	39.4	45.6	47.6	54.3	44.7	46.2	46.9	45.4	46	49.1
Manganese	mg/L	0.05	0.012	0.022	0.005	0.027	0.009	0.03	0.013	0.011	0.01	0.011	0.012	0.013	0.011	0.012	0.014	0.012	0.012	0.013
Nitrate	mg/L	10	< 0.05	0.19	< 0.05	< 0.05	< 0.05	< 0.05	0.13	<0.05	<0.05	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.3	0.5	0.4	0.4	0.4	2	0.9	0.4	0.5	0.8	1	0.8	0.7	0.8	1.5	1	0.7	0.8
pH-Lab	pH unit	6.5-8.5	7.79	7.96	7.81	7.89	7.81	7.96	7.73	7.91	8.02	7.74	7.73	7.85	7.5	7.58	7.76	7.78	7.7	7.79
Phenols	mg/L	N/A	0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.01	0.004	0.005	0.006	0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	2.7	2.8	2.8	2.6	2.9	2.9	3	2.9	3	3.5	3.9	3.8	3.5	3.6	3.6	3.5	3.6	4.2
Sodium	mg/L	200	29.5	38.5	38.1	36.9	36.9	39	38.5	41.7	39.2	33	34.3	33	31.8	32.8	34	36.1	34.8	39.6
Sulphate	mg/L	500	20	22	20	20	25	23	19	19	17	18	20	17	21	18	15	15	16	12
TDS	mg/L	500	491	**510**	**515**	**504**	**555**	**530**	**542**	**538**	**530**	**536**	**546**	**555**	**521**	**526**	**541**	**523**	**513**	**535**
TSS	mg/L	N/A											4	12		6			5	
Turbidity	NTU	N/A											1	4		3			1.1	
Colour	TCU	5											3	2		**18**			< 2	
Aluminum	mg/L	0.1	0.06	0.07	0.05	0.06	0.08	0.04	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.06
Antimony	mg/L	0.006	< 0.0001	< 0.0001	0.0002	< 0.0001	0.0002	< 0.0001	0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0004	0.0005	0.0006	0.0006	0.0007	0.0004	0.0003	0.0003	0.0005
Barium	mg/L	1	0.208	0.193	0.208	0.201	0.219	0.207	0.206	0.235	0.214	0.443	0.461	0.494	0.455	0.442	0.43	0.444	0.435	0.515
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.023	0.022	0.022	0.017	0.013	0.022	0.022	0.02	0.022	0.082	0.096	0.117	0.103	0.097	0.106	0.099	0.098	0.109
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000014
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	0.0034	< 0.0002	0.0051	0.0024	< 0.0002	< 0.0002	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	0.0004	0.0005	0.0004	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	0.002	0.0004	0.0015	0.0003	0.0009	0.0009	0.0004	0.0014	0.0008	< 0.0001	< 0.0001	0.0002	0.0002	0.0004	0.0003	0.0006	0.0007	0.0004
Lead	mg/L	0.01	0.00007	< 0.00002	< 0.00002	< 0.00002	0.00004	0.00003	0.00012	0.00008	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004	< 0.00002	0.00006	< 0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0001	< 0.0001	< 0.0001	0.0004	< 0.0001	0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.001	0.0009	0.0007	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	0.002	< 0.001	0.003	0.002	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	N/A	0.528	0.564	0.555	0.525	0.536	0.543	0.534	0.551	0.536	1.41	1.58	1.5	1.53	1.37	1.41	1.43	1.47	1.48
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	0.0024	0.0043	0.0019	0.0011	0.002	0.001	0.0021	0.0022	0.0006
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	61-10-I 8-May-18	61-10-I 24-Jul-18	61-10-I 11-Oct-18	61-10-I 9-May-19	61-10-I 16-Jul-19	61-10-I 9-Oct-19	61-10-I 5-May-20	61-10-I 13-Jul-20	61-10-I 13-Oct-20	61-10-I 4-May-21	61-10-I 5-Jul-21	61-10-I 13-Oct-21	61-10-I 3-May-22	61-10-I 26-Jul-22	61-10-I 25-Oct-22	61-10-I 2-May-23	61-10-I 12-Jul-23	61-10-I 18-Oct-23
Alkalinity	mg/L	500	353	364	387	340	358	384	356	380	416	330	350	318	343	383	369	405	436	489
Unionized Ammonia	mg/L	N/A		< 0.01			< 0.01		< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	0.1	< 0.01	< 0.01	0.02	< 0.01	<0.01
Ammonia	mg/L	N/A	0.31	0.28	0.39	0.32	0.39	0.38	0.34	0.35	0.41	0.39	0.37	0.4	0.34	0.41	0.36	4.68	0.38	0.39
BOD	mg/L	N/A		< 2			< 3		< 3	< 3	< 3	< 6	< 3	< 3	< 3	< 3	< 3	< 3	< 3	
Calcium	mg/L	N/A	108	104	119	110	112	120	114	121	128	101	99.3	103	119	116	118	129	151	147
COD	mg/L	N/A	19	14	34	16	35	19	9	15	25	14	17	10	12	16	18	18	30	31
Chloride	mg/L	250	63.5	84.6	86.1	77.3	83.3	100	75.3	87.5	117	92.3	103	111	92.2	89.3	102	135	183	228
Conductivity	umhos/cm	N/A	874	986	1010	931	951	1020	942	1010	1150	944	963	942	989	986	1060	1200	1350	1480
Cyanide	mg/L	0.2		< 0.005			< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
DOC	mg/L	5	5	**5.6**	**6.9**	**5.5**	**5.6**	**6.4**	**5.4**	**8.7**	**5.4**	3.7	3.5	2.2	3.1	3.6	1.7	4.4	1.3	**8.9**
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	0.4	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 1	<0.1
Hardness	mg/L	500	455	449	496	455	470	**512**	476	**506**	**558**	442	439	449	497	493	**514**	**550**	**592**	**601**
Ion Balance	%	N/A							5.1	6.08	5.38	2.04	0.581	1.04	6.35	2.6	4.32	0.91	1.28	7.01
Iron	mg/L	0.3	0.177	0.156	0.14	**0.421**	0.04	0.17	< 0.005	0.2	0.17	0.224	0.084	0.12	**0.439**	0.207	0.269	0.249	**0.438**	**0.505**
Magnesium	mg/L	N/A	45.1	45.9	48.2	43.9	46.3	51.6	46.4	49.5	58.3	46.2	46.5	46.7	48.8	49.5	53.2	55.1	52.3	56.7
Manganese	mg/L	0.05	0.012	0.012	0.014	0.016	0.011	0.014	0.015	0.014	0.014	0.014	0.01	0.012	0.016	0.013	0.015	0.016	0.02	**0.066**
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05	0.18	< 0.05	< 0.05	< 0.05	0.43	< 0.05	< 0.05	0.06	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.5	<0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	<0.05
Tot Kjel N	mg/L	N/A	0.7	0.7	0.8	0.6	0.6	0.8	0.7	0.7	1	0.7	0.6	0.7	0.6	0.9	0.7	4.9	0.8	1.1
pH-Lab	pH unit	6.5-8.5	7.87	7.79	7.88	7.91	7.57	7.79	7.72	7.69	7.7	7.94	7.8	7.86	7.76	7.63	7.74	7.7	7.71	7.56
Phenols	mg/L	N/A	< 0.001	0.011	0.003	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	0.04	0.02	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1
Potassium	mg/L	N/A	4	3.8	3.9	3.6	4.3	4.5	4.3	4.9	5	4	5	4.4	4.3	4.4	4.8	5	5	4.8
Sodium	mg/L	200	30.4	33.3	36.7	26.7	35	38.7	31	40	49.7	24.7	30.9	26.1	29.7	31.7	35.3	43.7	58.1	60
Sulphate	mg/L	500	39	19	23	40	15	20	32	26	22	22	25	27	28	31	34	43	50	40
TDS	mg/L	500	**503**	**509**	**550**	**506**	**512**	**565**	**518**	**557**	**630**	489	**520**	**510**	**528**	**552**	**570**	**654**	**762**	**806**
TSS	mg/L	N/A		72			40		144	17	48	154	31	118	31	63	72	61	70	11
Turbidity	NTU	N/A		82.6			35		135	21.5	25.6	23.8	10.8	30.7	21.7	84.1	76.5	10.7	24.7	1.2
Colour	TCU	5		< 2			< 2		< 2	< 2	3	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	3
Aluminum	mg/L	0.1	0.06	0.06	0.06	0.07	0.06	0.08	0.04	0.07	0.06	0.07	0.04	0.05	0.04	0.07	0.08	0.04	0.07	0.09
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001
Barium	mg/L	1	0.427	0.433	0.458	0.382	0.463	0.494	0.467	0.503	0.578	0.455	0.502	0.525	0.503	0.535	0.592	0.613	0.624	0.649
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001
Boron	mg/L	5	0.101	0.104	0.108	0.088	0.125	0.13	0.11	0.121	0.142	0.118	0.139	0.129	0.128	0.127	0.06	0.142	0.137	0.139
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000012	< 0.000012	<0.000015
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001
Cobalt	mg/L	N/A	0.009	< 0.005	< 0.005	< 0.005	0.0002	< 0.005	0.0001	< 0.005	0.007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0003
Copper	mg/L	1	< 0.0001	< 0.0001	0.0002	0.0005	0.0005	0.0001	< 0.0001	0.0004	0.0025	0.001	0.0004	0.0004	0.0003	0.0008	< 0.0001	0.0001	0.0001	0.0007
Lead	mg/L	0.01	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00004	0.00034	0.00004	< 0.00004	0.00009	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00004	< 0.00004	<0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002
Molybdenum	mg/L	N/A	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0011	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0062
Selenium	mg/L	0.01	0.005	0.006	< 0.001	< 0.001	0.001	0.001	< 0.001	0.001	0.001	< 0.001	0.001	0.001	0.002	0.001	< 0.001	0.001	0.002	<0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Strontium	mg/L	N/A	1.34	1.43	1.42	1.37	1.59	1.7	1.5	1.6	1.96	1.71	1.9	1.89	1.64	1.82	1.85	1.89	1.8	1.84
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005
Vanadium	mg/L	N/A	0.0002	0.0002	0.0002	0.0002	0.0002	< 0.0001	0.0015	0.0003	0.0002	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0001	0.0002	0.0002	0.0004	0.0004
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.008	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry
Summary - General Water Quality

Parameters	Units	ODWQS	61-10-I 6-May-24	61-10-I 29-Jul-24	61-10-I 16-Oct-24	61-10-I (Dup) 16-Oct-24	61-10-II 26-May-15	61-10-II 13-Jul-15	61-10-II 13-Oct-15	61-10-II 25-May-16	61-10-II 13-Jul-16	61-10-II 17-Oct-16	61-10-II 25-May-17	61-10-II 20-Jul-17	61-10-II 18-Oct-17	61-10-II 8-May-18	61-10-II 24-Jul-18	61-10-II 11-Oct-18	61-10-II 9-May-19	61-10-II 16-Jul-19
Alkalinity	mg/L	500	408	436	449	454	297	292	283	300	301	293	308	311	306	313	319	354	367	357
Unionized Ammonia	mg/L	N/A	<0.01	<0.01	<0.01	0.02					< 0.01			< 0.01			< 0.01			< 0.01
Ammonia	mg/L	N/A	0.62	0.52	0.59	0.64	0.06	0.06	0.06	0.2	0.06	0.08	0.05	0.07	0.06	0.07	0.2	0.14	0.14	0.1
BOD	mg/L	N/A	<3	<3	<3	<3			< 2		< 3			< 3			2			< 3
Calcium	mg/L	N/A	149	169	161	164	111	120	117	116	116	110	119	114	115	118	121	123	135	140
COD	mg/L	N/A	32	32	41	32	22	10	21	63	< 5	78	11	39	10	< 5	179	99	45	15
Chloride	mg/L	250	175	188	190	198	18.8	19.1	22.4	18.3	19.7	26.1	18.6	17.3	16.3	21.6	27.4	26.7	32.2	31.6
Conductivity	umhos/cm	N/A	1390	1450	1490	1500	780	771	741	782	780	762	781	815	803	816	872	866	942	909
Cyanide	mg/L	0.2	<0.005	<0.005	<0.005	<0.005	-	< 0.005	< 0.005		< 0.005			< 0.005			< 0.005			< 0.005
DOC	mg/L	5	**8.2**	**5.9**	**6.4**	**6.5**	2.1	2.1	3.7	1.8	1.7	2.4	2	2.2	2.1	2.5	2.7	3	3.8	4.3
Fluoride	mg/L	1.5	<0.1	<0.1	<0.1	<0.1	0.2	0.1	0.2	0.2	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	**602**	**688**	**674**	**683**	404	433	438	416	424	400	429	417	420	430	450	443	485	494
Ion Balance	%	N/A	2.91	5.73	5.12	4.71														
Iron	mg/L	0.3	**0.715**	**0.884**	**0.378**	**0.384**	**0.415**	**0.773**	**1.07**	0.185	**0.843**	**0.674**	**0.399**	**0.646**	**0.702**	0.049	0.192	0.12	0.147	**0.347**
Magnesium	mg/L	N/A	56	64.7	66	66.5	30.6	32.6	35.3	30.4	32.4	30.4	31.8	31.8	32.3	32.8	35.9	33	36	35.1
Manganese	mg/L	0.05	0.025	0.028	0.021	0.021	**0.052**	0.023	0.029	**0.096**	0.027	0.031	**0.062**	0.043	0.044	0.04	**0.06**	**0.077**	**0.081**	**0.075**
Nitrate	mg/L	10	<0.05	<0.05	<0.05	<0.05	0.1	< 0.1	< 0.1	0.1	< 0.1	0.1	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05	0.2	< 0.05
Nitrite	mg/L	1	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	1.1	1.1	1.3	1.4	0.7	0.5	0.5	0.6	0.3	0.7	0.3	0.3	0.3	1.7	2.6	1.4	0.6	0.4
pH-Lab	pH unit	6.5-8.5	7.68	7.76	7.74	7.67	7.87	7.9	7.71	7.65	7.79	7.95	7.9	7.79	7.96	7.93	7.85	7.86	7.95	7.55
Phenols	mg/L	N/A	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.043	0.007	0.003	0.006	0.002	< 0.001	< 0.1	0.014	< 0.002	< 0.002
Phosphorus	mg/L	N/A	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	2.36	1.18
Potassium	mg/L	N/A	4.6	4.9	5.2	5.2	1.8	1.8	1.9	2	1.7	1.7	1.8	1.7	2.5	2.6	2.3	2.6	2.3	2.1
Sodium	mg/L	200	65	72.3	76.3	76.6	13.4	10	11	16.6	10	11.7	14.4	11.7	15.1	23.2	13.5	27.4	26	19.8
Sulphate	mg/L	500	54	61	49	49	100	98	86	106	98	77	78	81	68	115	103	103	131	103
TDS	mg/L	500	**753**	**789**	**811**	**817**	455	458	444	471	460	434	450	445	433	**502**	495	**529**	**583**	**546**
TSS	mg/L	N/A	40	7	18	15		250	4800		1840			8200			23600			2600
Turbidity	NTU	N/A	1.7	9	7.5	6.3		156	1340		735			933			29500			1320
Colour	TCU	5	<2	2	2	2		< 2	6		2			3			< 2			< 2
Aluminum	mg/L	0.1	0.06	0.05	0.08	0.08	0.03	0.03	0.03	0.03	0.03	0.06	0.03	0.04	0.06	0.07	0.06	0.06	0.07	0.07
Antimony	mg/L	0.006	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0004	0.0005	0.0004	0.0003	0.0004	0.0003	0.0002	0.0003	0.0006	0.0006	0.0005	0.0006	0.0006
Barium	mg/L	1	0.48	0.508	0.713	0.721	0.147	0.179	0.18	0.138	0.18	0.16	0.138	0.158	0.16	0.12	0.117	0.122	0.109	0.107
Beryllium	mg/L	N/A	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.136	0.157	0.166	0.167	0.015	0.039	0.027	0.028	0.035	0.039	0.028	0.031	0.036	0.028	0.031	0.03	0.024	0.029
Cadmium	mg/L	0.005	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	<0.001	<0.001	<0.001	<0.001	0.0024	0.0036	< 0.0002	< 0.0002	0.0015	< 0.0002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	0.0003	<0.0001	0.0002	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0007	0.012	< 0.005	< 0.005	0.0012
Copper	mg/L	1	<0.0001	0.0004	0.0008	0.0006	< 0.0001	0.0003	< 0.0001	0.0002	< 0.0001	0.0002	0.0008	0.0009	0.0009	0.0024	0.0016	0.0008	0.0008	0.0015
Lead	mg/L	0.01	<0.00002	0.00003	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00006	0.00003	0.00008	0.00005	0.0001	0.00008	0.00004	0.00003	0.00006
Mercury	mg/L	0.001	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0001	< 0.0001	0.0006	< 0.0001	0.0001	0.0004	0.0002	0.0003	0.0018	0.0006	0.0012	0.0009	0.0005
Nickel	mg/L	N/A	0.0038	0.0056	0.0058	0.0059	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	<0.001	0.002	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	N/A	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.66	1.73	2.07	2.09	0.649	0.713	0.764	0.608	0.773	0.664	0.645	0.718	0.654	0.613	0.709	0.638	0.719	0.694
Thallium	mg/L	N/A	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0003	0.0005	0.0004	0.0004	0.0017	0.0013	0.0033	0.0016	0.0007	0.0008	0.0018	0.0017	0.0005	0.0002	0.0001	0.0002	0.0002	0.0002
Zinc	mg/L	5	<0.005	0.007	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	61-10-II 9-Oct-19	61-10-II 5-May-20	61-10-II 13-Jul-20	61-10-II 13-Oct-20	61-10-II 4-May-21	61-10-II 5-Jul-21	61-10-II 13-Oct-21	61-10-II 3-May-22	61-10-II 26-Jul-22	61-10-II 25-Oct-22	61-10-II 2-May-23	61-10-II 12-Jul-23	61-10-II 18-Oct-23	61-10-II 6-May-24	61-10-II 29-Jul-24	61-10-II 16-Oct-24	61-10-III 8-May-18	61-17-I 11-Oct-18
Alkalinity	mg/L	500	343	370	377	370	384	396	367	376	405	374	377	384	398	390	439	383	375	389
Unionized Ammonia	mg/L	N/A		< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	0.02	<0.01	<0.01		
Ammonia	mg/L	N/A	0.06	0.06	0.08	0.06	0.04	0.05	0.09	0.05	0.04	0.08	0.29	0.03	0.07	1.47	0.35	0.42	0.39	0.36
BOD	mg/L	N/A		< 3	8	< 3	3	< 3	< 3	< 3	< 3	< 3	< 3	< 3		<3	<3	<3		
Calcium	mg/L	N/A	129	155	151	141	138	141	147	159	160	176	212	200	182	177	215	178	113	117
COD	mg/L	N/A	8	6	540	7	19	18	11	21	12	20	7	18	16	66	25	33	16	260
Chloride	mg/L	250	30.7	39.1	40.6	42.4	55.1	60.6	80	82.1	92.6	131	226	**260**	**285**	179	204	172	79.6	88
Conductivity	umhos/cm	N/A	935	977	943	966	1040	1020	1090	1110	1120	1230	1480	1550	1530	1440	1430	1390	926	1010
Cyanide	mg/L	0.2		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		<0.005	<0.005	<0.005		
DOC	mg/L	5	3.1	4.1	4.2	2.4	2.8	3.6	1.9	2	1.7	0.2	1.2	< 0.2	2.9	3.2	1.5	1.6	**5.3**	**6.5**
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
Hardness	mg/L	500	459	**548**	**532**	**508**	499	497	**516**	**537**	**540**	**609**	**702**	**656**	**614**	**591**	**733**	**600**	474	490
Ion Balance	%	N/A		6.07	3.46	5.72	0.569	1.89	0.334	3.13	0.499	4.44	1.03	5.07	11.7	1.76	1.77	0.561		
Iron	mg/L	0.3	0.092	< 0.005	**0.641**	0.033	0.017	0.197	0.112	0.147	0.157	**0.554**	**0.544**	0.111	**0.311**	0.171	**0.98**	0.062	0.121	0.181
Magnesium	mg/L	N/A	33.1	38.9	37.6	38.3	37.4	35.2	36.2	33.8	34.1	41	42.2	38	38.7	36.4	47.4	37.7	46.7	48
Manganese	mg/L	0.05	**0.089**	**0.095**	**0.075**	**0.092**	**0.052**	**0.07**	**0.066**	**0.072**	**0.061**	**0.069**	**0.083**	**0.095**	**0.094**	**0.078**	**0.065**	**0.065**	0.012	0.014
Nitrate	mg/L	10	< 0.05	< 0.05	< 0.05	< 0.05	0.05	0.07	0.05	0.07	0.07	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	0.5	0.3	0.9	0.3	0.5	0.3	0.3	0.3	0.4	0.4	1	0.4	0.3	1.3	0.6	0.7	1.5	2.8
pH-Lab	pH unit	6.5-8.5	7.86	7.74	7.75	7.75	7.91	7.74	7.79	7.72	7.61	7.65	7.7	7.58	7.66	7.67	7.74	7.8	7.77	7.84
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	0.018
Phosphorus	mg/L	N/A	0.88	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
Potassium	mg/L	N/A	3	2.5	2.2	3.1	2	2.5	2.5	2.1	2.1	2.6	2.4	2.5	2.5	2.3	2.9	2.9	4.1	4
Sodium	mg/L	200	55	25.4	18.7	38.7	35.2	28.1	33.8	34.3	36.2	38.2	42.4	46.6	43.4	52.2	53.9	52.1	32.5	36.5
Sulphate	mg/L	500	125	108	101	98	105	98	105	83	76	75	84	88	98	94	97	98	23	27
TDS	mg/L	500	**581**	**591**	**578**	**583**	**603**	**603**	**625**	**620**	**645**	**689**	**835**	**865**	**834**	**782**	**776**	**753**	**524**	**554**
TSS	mg/L	N/A		860	49000	2100	3550	818	1870	1740	1520	1120	1870	1910	1890	1900	2580	1790		
Turbidity	NTU	N/A		647	20800	799	2100	82.2	765	666	259	75.7	923	960	979	904	968	867		
Colour	TCU	5		< 2	< 2	< 2	< 2	< 2	2	< 2	< 2	< 2	< 2	< 2	<2	<2	<2	<2		
Aluminum	mg/L	0.1	0.08	0.05	0.08	0.05	0.08	0.09	0.07	0.05	0.08	0.1	0.06	0.1	**0.11**	0.06	0.07	0.08	0.07	
Antimony	mg/L	0.006	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	**0.06**
Arsenic	mg/L	0.025	0.0003	0.0012	0.0008	0.0003	0.0002	0.0004	0.0003	0.0002	0.0002	0.0004	0.0001	0.0001	0.0003	0.0001	0.0003	0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	0.123	0.127	0.128	0.136	0.102	0.114	0.128	0.136	0.134	0.172	0.178	0.168	0.159	0.157	0.195	0.171	0.452	0.0001
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	0.46
Boron	mg/L	5	0.03	0.025	0.031	0.032	0.02	0.028	0.029	0.019	0.018	< 0.005	0.022	0.019	0.02	0.021	0.033	0.025	0.106	< 0.002
Cadmium	mg/L	0.005	< 0.000015	0.000027	< 0.000015	< 0.000015	< 0.000015	0.000017	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	0.000015	<0.000015	<0.000015	0.000016	<0.000015	< 0.000015	**0.107**
Chromium	mg/L	0.05	0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.000015
Cobalt	mg/L	N/A	< 0.005	0.0034	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0021	0.0022	0.0013	0.0018	< 0.0001	< 0.001
Copper	mg/L	1	0.0005	0.003	0.0006	0.0019	0.0008	0.0008	0.0009	0.0007	0.0009	0.0002	0.0003	0.0004	0.0009	0.0002	0.0006	0.0013	0.0005	< 0.005
Lead	mg/L	0.01	0.00002	0.00273	0.00007	0.00006	0.00003	0.00008	0.0002	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	<0.00002	<0.00002	0.00005	<0.00002	0.00005	0.0009
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0014	0.0004	0.0004	0.0009	0.0015	0.0007	0.001	0.0007	0.0011	0.0007	0.0009	0.0009	0.0008	0.0008	0.0003	0.0009	< 0.0001	< 0.00002
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0027	0.0009	0.0015	0.0014	< 0.01	< 0.0001
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.001	0.001	0.001	0.002	0.003	<0.001	<0.001	0.002	<0.001	< 0.001	< 0.01
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	0.001
Strontium	mg/L	N/A	0.646	0.716	0.711	0.743	0.643	0.648	0.677	0.604	0.629	0.744	0.788	0.779	0.76	0.738	0.916	0.723	1.34	< 0.0001
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	1.42
Vanadium	mg/L	N/A	0.0002	0.0018	0.0002	0.0003	< 0.0001	0.0002	0.0003	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	0.0001	<0.0001	0.0001	0.0001	0.0002	< 0.00005
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	0.0003

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	61-17-I 9-May-19	61-17-I 9-Oct-19	61-17-I 5-May-20	61-17-I 13-Jul-20	61-17-I 13-Oct-20	61-17-I 4-May-21	61-17-I 5-Jul-21	61-17-I 13-Oct-21	61-17-I 3-May-22	61-17-I 26-Jul-22	61-17-I 25-Oct-22	61-17-I 2-May-23	61-17-I 12-Jul-23	61-17-I 18-Oct-23	61-17-I 6-May-24	61-17-I 29-Jul-24	61-17-I 16-Oct-24	61-17-II 5-Jul-21
Alkalinity	mg/L	500	342	383	367	392	435	324	351	331	336	388	384	410	469	**517**	440	440	483	457
Unionized Ammonia	mg/L	N/A			< 0.01	0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	<0.01	<0.01	<0.01	<0.01	
Ammonia	mg/L	N/A	0.41	0.36	0.38	0.38	0.42	0.38	0.41	0.45	0.43	0.45	0.42	2.51	0.44	0.53	0.46	0.95	0.64	0.54
BOD	mg/L	N/A			< 3	< 3	< 3	< 6	< 3	< 3	< 3	< 3	< 3	< 3	< 3		<3	<3	<3	< 3
Calcium	mg/L	N/A	108	141	109	119	129	97.3	97.4	105	112	115	123	126	148	142	143	161	158	129
COD	mg/L	N/A	105	41	13	21	25	19	50	20	45	53	56	21	54	49	163	29	53	83
Chloride	mg/L	250	76.1	107	82.2	89.7	132	90.7	102	109	91.6	83.6	91.8	121	171	232	184	184	203	133
Conductivity	umhos/cm	N/A	933	1060	956	1010	1220	932	950	971	981	991	1030	1160	1370	1510	1480	1440	1570	1220
Cyanide	mg/L	0.2			< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		<0.005	<0.005	<0.005	< 0.005
DOC	mg/L	5	**6.2**	**6.2**	**5.4**	**7.6**	**5.4**	3.7	4.2	2.1	3.4	3.4	2.1	4.7	2.3	**9.4**	**8.9**	**6.9**	**6.4**	**6.6**
Fluoride	mg/L	1.5	0.4	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 1	<0.1	<0.1	<0.1	<0.1	< 0.1
Hardness	mg/L	500	457	**574**	464	**504**	**568**	432	431	456	475	495	**536**	**543**	**587**	**596**	**592**	**663**	**667**	**533**
Ion Balance	%	N/A			3.68	4.06	3.95	1.1	2.25	0.92	4.49	3.55	7.07	2.4	1.79	8.6	0.344	3.6	2.26	0.813
Iron	mg/L	0.3	0.178	**0.534**	0.136	0.114	0.154	0.124	0.087	0.088	0.181	0.105	0.246	0.134	**0.325**	0.173	**0.509**	**0.863**	**0.348**	**0.321**
Magnesium	mg/L	N/A	45.5	53.8	46.6	50.2	59.8	46	45.7	47.1	47.5	50.5	55.6	55.8	52.8	58.6	56.9	63.4	66.2	51.1
Manganese	mg/L	0.05	0.013	0.028	0.012	0.012	0.013	0.012	0.01	0.013	0.013	0.013	0.015	0.015	0.018	0.016	0.022	0.027	0.021	0.02
Nitrate	mg/L	10	0.19	< 0.05	< 0.05	0.43	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	< 0.05
Tot Kjel N	mg/L	N/A	1.1	0.9	0.7	0.9	1	0.7	1.1	0.7	0.9	1.2	1.1	2.8	1.1	1.5	1.5	1.5	1.6	1.1
pH-Lab	pH unit	6.5-8.5	7.86	7.79	7.79	7.68	7.67	7.88	7.77	7.83	7.72	7.7	7.75	7.78	7.65	7.47	7.71	7.71	7.76	7.54
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.002
Phosphorus	mg/L	N/A	2.91	0.71	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1
Potassium	mg/L	N/A	3.9	4.5	4.2	4.2	5.1	4.1	4.3	4.5	4.4	4.5	5.1	5.1	5.1	5.1	4.9	4.7	5.3	4.5
Sodium	mg/L	200	31.5	40.5	33	37	53.3	25	26.9	26.6	28.1	32.7	39	45.4	58.2	62.3	68.6	66.9	76.1	58.7
Sulphate	mg/L	500	49	22	20	24	17	29	24	26	30	27	31	37	37	35	56	63	38	34
TDS	mg/L	500	**521**	**600**	**516**	**560**	**657**	487	**512**	**517**	**516**	**547**	**577**	**635**	**754**	**822**	**806**	**785**	**859**	**685**
TSS	mg/L	N/A			66	220	235	430	1940	730	360	1420	1000	902	522	73	1630	788	1370	1040
Turbidity	NTU	N/A			67.1	374	461	70.8	217	675	456	269	940	144	231	78.4	462	165	204	884
Colour	TCU	5			< 2	< 2	3	< 2	< 2	< 2	< 2	< 2	< 2	< 2	2	4	2	3	4	3
Aluminum	mg/L	0.1	0.07	**0.13**	0.06	0.07	0.05	0.07	0.06	0.05	0.04	0.07	0.09	0.04	0.07	0.1	0.05	0.05	0.08	0.09
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001
Barium	mg/L	1	0.416	0.511	0.442	0.506	0.59	0.458	0.495	0.545	0.539	0.551	0.619	0.63	0.665	0.72	0.552	0.501	0.717	0.533
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002
Boron	mg/L	5	0.105	0.131	0.118	0.123	0.149	0.123	0.138	0.133	0.133	0.134	0.069	0.147	0.141	0.152	0.144	0.155	0.167	0.148
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	<0.000015	< 0.000015
Chromium	mg/L	0.05	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001
Cobalt	mg/L	N/A	0.006	< 0.005	< 0.0001	< 0.005	0.008	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0003	0.0003	<0.0001	0.0002	< 0.005
Copper	mg/L	1	0.0006	0.0001	< 0.0001	< 0.0001	0.0006	0.0007	0.0002	0.0004	0.0004	< 0.0001	0.0001	0.0001	0.0001	0.0007	0.0009	0.0004	0.0008	0.0002
Lead	mg/L	0.01	< 0.00002	0.00022	< 0.00002	0.00002	< 0.00004	0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00004	< 0.00004	<0.00002	0.00006	<0.00002	<0.00002	< 0.00004
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002
Molybdenum	mg/L	N/A	< 0.0001	< 0.0001	0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0067	0.0044	0.0055	0.006	< 0.01
Selenium	mg/L	0.01	< 0.001	0.001	< 0.001	< 0.001	0.001	< 0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.002	<0.001	<0.001	0.002	<0.001	0.002
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001
Strontium	mg/L	N/A	1.48	1.7	1.55	1.65	2.04	1.71	1.81	1.9	1.73	1.87	1.91	1.97	1.85	1.98	1.72	1.67	2.08	1.68
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0002	0.0006	0.0002	0.0002	0.0002	< 0.0001	0.0001	< 0.0001	0.0001	0.0002	0.0002	0.0003	0.0004	0.0004	0.0004	0.0005	0.0004	0.0001
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	62-17-I 8-May-18	62-17-I 11-Oct-18	62-17-I 9-May-19	62-17-I 13-Oct-20	62-17-I 4-May-21	62-17-I 13-Oct-21	62-17-I 3-May-22	62-17-I 26-Jul-22	62-17-I 25-Oct-22	62-17-I 2-May-23	62-17-I 12-Jul-23	62-17-I 18-Oct-23	62-17-I 6-May-24	62-17-I 16-Oct-24	62-17-II 8-May-18	62-17-II 11-Oct-18	62-17-II 9-May-19	62-17-II 9-Oct-19
Alkalinity	mg/L	500	413	**672**	**600**	**574**	**667**	**653**	372	443	**536**	483	**569**	**505**	**524**	366	**517**	495	395	467
Unionized Ammonia	mg/L	N/A				< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	0.01	0.01	<0.01	<0.01	<0.01				
Ammonia	mg/L	N/A	0.94	0.76	0.75	0.65	0.72	0.65	0.06	0.61	0.36	2.01	0.65	0.23	0.14	0.32	0.5	0.53	0.43	0.52
BOD	mg/L	N/A				15	6	13	< 3	6	16	3	11		<3	<3				
Calcium	mg/L	N/A	103	89.3	57.4	64.2	43	41.9	182	113	73.5	104	94	93.1	114	140	159	165	142	165
COD	mg/L	N/A	439	458	324	114	104	95	13	128	72	29	116	29	46	25	38	44	29	46
Chloride	mg/L	250	159	233	198	123	151	151	56.9	91	109	105	164	158	156	26.8	152	171	103	184
Conductivity	umhos/cm	N/A	1980	3450	2640	1700	1800	1730	1020	1130	1380	1230	1520	1360	1490	829	1360	1490	1160	1440
Cyanide	mg/L	0.2				< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		<0.005	<0.005				
DOC	mg/L	5	**79.1**	**18.8**	**86.7**	**19.1**	**15.6**	**7.7**	4	**5.7**	**7.4**	**6.3**	3.7	**9.3**	**9.4**	3.9	**12.1**	**12.1**	**10.1**	**9.8**
Fluoride	mg/L	1.5	< 0.1	< 1	< 1	0.6	0.6	< 0.1	< 0.1	0.3	0.3	< 0.1	< 1	<0.1	<0.1	<0.1	< 0.1	< 0.1	0.3	< 0.1
Hardness	mg/L	500	450	388	269	308	219	201	497	421	265	308	289	291	382	392	**626**	**643**	**545**	**658**
Ion Balance	%	N/A				6.88	1.93	4.33	4.78	0.71	4.02	1.34	10.9	13.6	0.299	4.44				
Iron	mg/L	0.3	0.154	0.014	< 0.005	**1.21**	0.203	**0.96**	0.012	0.14	**0.301**	0.006	0.186	0.122	0.058	0.037	**0.412**	**0.46**	**0.415**	0.246
Magnesium	mg/L	N/A	46.8	40.1	30.6	35.9	27.1	23.4	10.5	33.6	19.8	11.6	13.1	14.2	23.2	10.3	55.7	56.1	46.3	59.8
Manganese	mg/L	0.05	0.023	0.014	0.005	0.01	0.009	0.011	< 0.001	0.027	0.023	< 0.001	0.025	0.027	0.037	0.005	0.025	0.03	0.024	0.023
Nitrate	mg/L	10	< 0.05	< 0.5	1.62	< 0.05	< 0.05	0.08	2.53	0.09	0.15	0.2	< 0.5	0.42	<0.05	0.1	< 0.05	< 0.05	0.19	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.5	< 0.5	< 0.05	0.13	0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	2.8	1.7	1.6	1.2	1.6	1.3	0.4	2.3	1.1	2.3	1.6	0.8	1.4	0.7	1.3	1.3	0.9	1.4
pH-Lab	pH unit	6.5-8.5	8.01	816	8.11	8.01	8.15	8.11	7.68	8.08	7.91	7.95	8	7.8	7.87	7.95	7.61	7.68	7.75	7.69
Phenols	mg/L	N/A	< 0.001	0.026	0.025	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	0.013	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	0.48	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	0.11	0.21
Potassium	mg/L	N/A	9.8	9.8	7.8	6.4	5.5	5.1	1.2	3.5	4	2.3	2.9	3	4.1	1.4	4.5	4.4	3.8	4.8
Sodium	mg/L	200	**335**	**704**	**536**	**334**	**359**	**360**	42.6	88.9	**235**	155	168	130	172	38.6	70.2	77.4	49	77.1
Sulphate	mg/L	500	**524**	**805**	**531**	156	87	45	72	38	31	32	21	32	23	34	52	51	77	26
TDS	mg/L	500	**1427**	**2285**	**1722**	**1065**	**1074**	**1019**	**588**	**635**	**795**	**701**	**806**	**737**	**814**	437	**805**	**823**	**659**	**797**
TSS	mg/L	N/A				112	194	164	46	322	80	42	1150	64	80	198				
Turbidity	NTU	N/A				46.5	48.4	63.8	23.8	243	102	238	386	210	149	61.7				
Colour	TCU	5				**46**	6	6	< 2	2	4	3	4	7	6	4				
Aluminum	mg/L	0.1	0.05		0.04	0.02	0.03	0.03	0.06	0.1	0.04	0.03	0.06	0.06	0.04	0.07	0.07		0.08	0.09
Antimony	mg/L	0.006	< 0.0002	**0.05**	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0003	0.0001	< 0.0001	0.0001	<0.0001	0.0001	< 0.0001	**0.08**	< 0.0001	0.0001
Arsenic	mg/L	0.025	0.01	0.0001	0.0031	0.0029	0.002	0.002	0.0002	0.0009	0.0013	0.0002	0.0004	0.0005	0.0002	0.0004	0.0002	< 0.0001	< 0.0001	< 0.0003
Barium	mg/L	1	0.121	0.0093	0.069	0.144	0.203	0.316	0.101	0.376	0.349	0.235	0.394	0.335	0.52	0.158	0.651	< 0.0001	0.385	0.64
Beryllium	mg/L	N/A	< 0.002	0.069	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	< 0.002	0.608	< 0.002	< 0.002
Boron	mg/L	5	0.304	< 0.002	0.432	0.407	0.371	0.354	0.028	0.123	0.147	0.134	0.145	0.122	0.17	0.063	0.133	< 0.002	0.102	0.16
Cadmium	mg/L	0.005	0.00013	**0.459**	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	0.000057	**0.135**	< 0.000015	< 0.000029
Chromium	mg/L	0.05	< 0.001	< 0.000015	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	< 0.001	< 0.000015	< 0.001	0.002
Cobalt	mg/L	N/A	< 0.0001	< 0.001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0004	0.0004	0.0002	0.0001	0.001	< 0.005	< 0.005
Copper	mg/L	1	0.0019	< 0.005	0.0035	0.002	0.001	0.0004	0.003	0.0019	0.0005	0.0008	0.0003	0.0006	0.0003	0.0013	0.0012	< 0.005	0.0005	< 0.0002
Lead	mg/L	0.01	< 0.0002	< 0.0001	< 0.00009	0.00009	0.00007	< 0.00004	< 0.00002	0.00037	< 0.00004	< 0.00004	< 0.00004	<0.00002	0.00003	0.00007	0.00005	0.0002	< 0.00002	< 0.00009
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	0.00012	< 0.00002	< 0.00002
Molybdenum	mg/L	N/A	0.0044	< 0.00002	< 0.0002	0.002	0.0003	0.0001	0.0003	0.0011	0.001	0.0002	0.0003	0.0004	0.0002	0.0008	0.0003	< 0.00002	< 0.0001	< 0.0002
Nickel	mg/L	N/A	< 0.01	0.0005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0035	0.0044	0.0012	< 0.01	< 0.0001	< 0.01	< 0.01
Selenium	mg/L	0.01	0.004	< 0.01	0.003	0.001	0.002	0.002	< 0.001	0.001	0.001	< 0.001	0.002	<0.001	<0.001	<0.001	< 0.001	< 0.01	< 0.001	0.002
Silver	mg/L	N/A	< 0.0002	0.004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	3.34	< 0.0001	3.67	3.53	2.72	2.4	0.433	1.85	2.01	1.08	1.53	1.45	2.94	0.783	1.52	< 0.0001	1.36	1.86
Thallium	mg/L	N/A	< 0.00005	4.5	< 0.00005	< 0.00005	< 0.00005	0.00007	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	1.57	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0023	< 0.00005	0.0023	0.0005	0.0009	0.001	0.0002	0.0006	0.001	0.0004	0.0006	0.0007	0.0007	0.0004	0.0004	< 0.00005	0.0002	< 0.0004
Zinc	mg/L	5	< 0.005	0.0044	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	< 0.005	0.0004	< 0.005	< 0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	62-17-II 5-May-20	62-17-II 13-Jul-20	62-17-II 13-Oct-20	62-17-II 4-May-21	62-17-II 13-Oct-21	62-17-II 3-May-22	62-17-II 26-Jul-22	62-17-II 25-Oct-22	62-17-II 2-May-23	62-17-II 12-Jul-23	62-17-II 18-Oct-23	62-17-II 6-May-24	62-17-II 29-Jul-24	62-17-II 16-Oct-24	62-17-III 8-May-18	62-17-III 24-Jul-18	62-17-III 11-Oct-18	62-17-III 16-Jul-19
Alkalinity	mg/L	500	420	473	492	439	409	421	462	460	454	437	480	380	392	491	259	291	344	380
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.01	<0.01	<0.01	< 0.01	0.01	< 0.01	< 0.01
Ammonia	mg/L	N/A	0.51	0.47	0.53	0.09	0.61	0.53	0.51	0.49	1.88	0.43	0.77	0.46	0.6	0.74	0.05	0.43	0.09	0.21
BOD	mg/L	N/A	< 3	< 3	< 3	3	< 3	< 3	< 3	< 3	< 3	< 3		<3	<3	3	< 3	8	4	5
Calcium	mg/L	N/A	135	158	156	60.6	137	142	148	150	154	154	145	128	144	168	61.7	52.1	51	54.7
COD	mg/L	N/A	37	40	42	14	75	25	29	41	23	31	37	29	142	44	43	118	< 5	84
Chloride	mg/L	250	111	142	167	40.2	138	112	120	138	149	123	172	68.7	74	184	19.3	19.5	20.3	25.2
Conductivity	umhos/cm	N/A	1190	1310	1430	1070	1220	1230	1240	1320	1330	1230	1360	1050	1040	1560	713	745	787	860
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	5	**7.1**	**13.6**	**6.8**	4.2	3.8	**5.3**	**6.1**	3.7	**6.3**	1.9	**7.6**	**6.2**	4.4	**6.7**	3.3	3.7	4.1	**5.2**
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	**534**	**614**	**637**	263	**551**	**558**	**585**	**612**	**607**	**559**	**552**	480	**542**	**654**	267	233	225	234
Ion Balance	%	N/A	1.67	3.44	3.09	1.94	2.94	3.56	3	4.88	1.47	0.704	7.58	1.13	4.23	3.67				
Iron	mg/L	0.3	0.273	0.282	0.27	0.037	**0.377**	**0.516**	**0.515**	**0.443**	**0.64**	**0.685**	**0.621**	**0.542**	**0.696**	**0.604**	0.067	0.135	0.152	**0.53**
Magnesium	mg/L	N/A	47.7	53.3	60.1	27.2	50.8	49.1	52.3	57.7	53.7	42.4	46.1	38.7	44.5	57	27.4	24.9	23.7	23.6
Manganese	mg/L	0.05	0.022	0.024	0.023	0.012	0.022	0.023	0.024	0.024	0.028	0.029	0.026	0.027	0.028	0.028	0.016	0.013	0.0117	0.01
Nitrate	mg/L	10	< 0.05	0.5	< 0.05	0.24	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05	0.06	< 0.05
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	N/A	1.2	1.3	1.4	0.6	1.2	1.1	1.2	1.3	2	0.8	1.5	1.1	0.9	1.6	0.7	2.3	0.9	1.7
pH-Lab	pH unit	6.5-8.5	7.66	7.56	7.62	8.07	7.72	7.69	7.55	7.56	7.65	7.7	7.61	7.76	7.9	7.65	8.1	8.07	8.03	7.87
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.1	< 0.002	< 0.002
Phosphorus	mg/L	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	4.14
Potassium	mg/L	N/A	4	4.2	4.9	4.2	4.5	4.2	4.3	5	4.5	3.8	3.7	3.2	3.3	4.5	4.5	3.5	3.4	3.4
Sodium	mg/L	200	50.2	67.5	81	156	57.3	50.4	56.6	66.7	58.8	48.6	51.4	33.9	34.4	83.1	77.8	83.8	95.3	127
Sulphate	mg/L	500	50	41	43	85	40	49	41	39	53	69	57	71	75	36	104	66	51	59
TDS	mg/L	500	**651**	**751**	**807**	**637**	**674**	**660**	**701**	**733**	**747**	**704**	**739**	**560**	**557**	**853**	450	426	452	**522**
TSS	mg/L	N/A	240	106	172	240	2800	772	151	272	276	77	64	358	15	198	2200	7600	2150	6550
Turbidity	NTU	N/A	43.5	42.3	14.3	1740	834	321	71.6	96.4	113	45.8	36.2	169	11.2	76.8	2440	9080	1120	12700
Colour	TCU	5	< 2	3	5	< 2	3	< 2	2	3	< 2	< 2	3	<2	<2	<2	< 2	< 2	< 2	< 2
Aluminum	mg/L	0.1	0.07	0.08	0.06	0.05	0.06	0.05	0.08	0.1	0.1	0.09	0.09	0.06	0.04	0.08	0.05	0.03	0.03	0.03
Antimony	mg/L	0.006	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0007	0.0003	0.0003	0.0004
Arsenic	mg/L	0.025	< 0.0001	< 0.0001	< 0.0001	0.0011	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0066	0.0097	0.0049	0.005
Barium	mg/L	1	0.421	0.549	0.581	0.168	0.54	0.491	0.499	0.6	0.511	0.383	0.419	0.23	0.241	0.532	0.126	0.144	0.151	0.162
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	0.116	0.144	0.163	0.057	0.139	0.128	0.127	0.071	0.129	0.093	0.103	0.073	0.073	0.148	0.05	0.053	0.059	0.064
Cadmium	mg/L	0.005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	<0.000015	0.000022	0.000055	0.000056	0.000039
Chromium	mg/L	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	N/A	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0003	0.0002	<0.0001	0.0003	0.0002	< 0.005	< 0.0001	0.0001
Copper	mg/L	1	< 0.0001	0.0002	0.0007	0.0017	0.0006	0.0002	0.0003	0.0002	0.0001	0.0001	0.0006	0.0002	0.0003	0.0009	0.0014	0.0003	< 0.0001	0.001
Lead	mg/L	0.01	< 0.00004	0.00006	0.00004	0.00043	0.00005	< 0.00004	< 0.00004	< 0.00004	0.00012	< 0.00004	<0.00002	0.00006	0.00002	<0.00002	0.00005	0.00007	< 0.00002	0.00005
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005
Molybdenum	mg/L	N/A	0.0001	< 0.0001	< 0.0001	0.0049	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.087	0.0302	0.0363	0.0163
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0047	0.0015	0.0019	0.0061	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	< 0.001	0.002	0.002	< 0.001	0.002	0.002	0.002	0.001	0.001	0.002	<0.001	<0.001	<0.001	<0.001	< 0.001	0.002	< 0.001	< 0.001
Silver	mg/L	N/A	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	N/A	1.41	1.6	1.89	0.489	1.64	1.45	1.58	1.76	1.56	1.22	1.3	1.02	1.04	1.63	0.466	0.423	0.413	0.415
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	N/A	0.0003	0.0003	0.0003	0.0008	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.0004	0.0004	0.0013	0.001	0.0015
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	0.008

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry Summary - General Water Quality

Parameters	Units	ODWQS	62-17-III 9-Oct-19	62-17-III 5-May-20	62-17-III 13-Oct-20	62-17-III 4-May-21	62-17-III 13-Oct-21	62-17-III 3-May-22	62-17-III 26-Jul-22	62-17-III 25-Oct-22	62-17-III 2-May-23	62-17-III 12-Jul-23	62-17-III 18-Oct-23	62-17-III 6-May-24	62-17-III 29-Jul-24	62-17-III 16-Oct-24
Alkalinity	mg/L	500	367	421	397	420	379	400	426	408	446	466	468	402	446	419
Unionized Ammonia	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.01	<0.01	<0.01
Ammonia	mg/L	N/A	0.02	0.16	0.05	0.57	0.2	0.09	0.15	0.16	0.31	0.19	0.09	<0.05	0.13	0.19
BOD	mg/L	N/A	< 3	< 3	< 3	< 3	4	< 3	8	4	< 3	< 3		<3	<3	<3
Calcium	mg/L	N/A	64.8	41.7	62.8	122	78.6	78.7	89.8	99.3	116	122	102	101	132	123
COD	mg/L	N/A	< 5	64	35	130	17	11	12	20	< 5	16	19	25	8	12
Chloride	mg/L	250	27.8	28.1	29.2	111	52.9	44.9	42.7	52.2	89.4	91	79.7	48.1	49.8	46.6
Conductivity	umhos/cm	N/A	882	1010	968	1170	991	1020	964	1010	1170	1170	1120	994	1040	1010
Cyanide	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		<0.005	<0.005	<0.005
DOC	mg/L	5	3	4.5	1.9	**6.1**	4.3	2.5	2.5	1.4	1.6	1.2	2.7	3.8	2.4	2.2
Fluoride	mg/L	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 1	<0.1	<0.1	<0.1	<0.1
Hardness	mg/L	500	279	191	281	**506**	329	323	370	427	449	452	405	391	498	465
Ion Balance	%	N/A		3.92	6.26	1.09	3.3	4	2.7	6.3	1.53	1.07	5.95	2.39	4.8	4.17
Iron	mg/L	0.3	0.006	< 0.005	< 0.005	**0.317**	0.015	0.01	0.007	0.2	0.045	0.014	<0.005	0.006	0.009	<0.005
Magnesium	mg/L	N/A	28.4	21.2	30.1	48.9	32.2	30.7	35.3	43.5	38.9	35.8	36.6	33.3	41.1	38.4
Manganese	mg/L	0.05	0.001	0.006	< 0.001	0.02	0.006	0.004	0.006	0.035	0.013	0.012	0.003	0.002	0.036	0.002
Nitrate	mg/L	10	< 0.05	0.15	0.13	< 0.05	< 0.05	0.21	0.13	0.1	0.19	< 0.5	0.24	<0.05	0.13	0.22
Nitrite	mg/L	1	< 0.05	< 0.05	< 0.05	0.12	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05
Tot Kjel N	mg/L	N/A	0.3	1.1	0.4	1.2	0.5	0.5	0.6	0.6	1	0.3	0.3	<0.1	0.3	0.4
pH-Lab	pH unit	6.5-8.5	8.04	8.16	8.1	7.83	8.04	7.98	7.87	7.87	7.87	7.83	7.75	7.86	7.86	7.89
Phenols	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus	mg/L	N/A	0.09	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	N/A	4	3.8	4.3	4.4	4.6	4.5	4.2	4.7	4.8	4.6	4.3	4.4	4.2	3.6
Sodium	mg/L	200	122	177	142	53.9	113	120	95.7	84.8	93.7	85.9	74.1	74.6	59.4	54.8
Sulphate	mg/L	500	72	74	84	39	87	78	63	61	64	62	61	60	56	56
TDS	mg/L	500	**539**	**598**	**590**	**633**	**596**	**597**	**587**	**591**	**673**	**682**	**604**	**530**	**555**	**540**
TSS	mg/L	N/A	128	2600	825	6600	8700	970	54100	1760	444	3240	562	468	13	950
Turbidity	NTU	N/A	408	1510	68.4	2200	855	1220	343	626	392	736	577	2260	6.3	203
Colour	TCU	5	< 2	< 2	< 2	2	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	<2	<2
Aluminum	mg/L	0.1	0.05	0.03	0.02	0.08	0.04	0.02	0.05	0.08	0.04	0.08	0.07	0.04	0.04	0.06
Antimony	mg/L	0.006	0.0007	0.0006	0.0004	< 0.0001	0.0002	0.0001	0.0001	0.0001	< 0.0001	< 0.0001	0.0002	<0.0001	0.0001	0.0002
Arsenic	mg/L	0.025	0.0017	0.0021	0.0011	0.0004	0.001	0.0007	0.0008	0.0013	0.0003	0.0003	0.0004	0.0002	0.0004	0.0003
Barium	mg/L	1	0.184	0.141	0.187	0.471	0.187	0.191	0.192	0.255	0.244	0.257	0.225	0.211	0.248	0.236
Beryllium	mg/L	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	0.062	0.072	0.065	0.127	0.046	0.048	0.038	< 0.005	0.038	0.033	0.036	0.03	0.028	0.025
Cadmium	mg/L	0.005	0.00007	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.05	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	N/A	< 0.005	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	0.0002	0.0004	0.0002
Copper	mg/L	1	0.0002	< 0.0001	0.0004	0.0011	0.0008	0.0008	0.001	0.0006	0.0006	0.0006	0.0007	0.0004	0.0013	0.0011
Lead	mg/L	0.01	< 0.00002	< 0.00004	< 0.00002	0.00008	< 0.00002	< 0.00002	0.00003	0.00006	< 0.00004	< 0.00004	<0.00002	<0.00002	<0.00002	<0.00002
Mercury	mg/L	0.001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	N/A	0.0492	0.0112	0.0094	0.001	0.0043	0.0054	0.0035	0.0018	0.0023	0.0017	0.0016	0.0019	0.0024	0.0026
Nickel	mg/L	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0006	0.0006	0.0013	0.0008
Selenium	mg/L	0.01	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	N/A	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium	mg/L	N/A	0.455	0.393	0.506	1.55	0.542	0.553	0.603	0.698	0.737	0.711	0.667	0.695	0.695	0.668
Thallium	mg/L	N/A	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	N/A	0.0032	0.0013	0.0027	0.0002	0.0009	0.0005	0.0006	0.0003	0.0003	0.0002	0.0002	0.0002	0.0003	0.0002
Zinc	mg/L	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	<0.005	0.01	<0.005

ODWQS - Ontario Drinking Water Quallity Standards

Bold & Highlighted - ODWQS exceedance

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	6-90-II 16-May-16	6-90-II 23-May-17	6-90-II 12-Nov-19	6-90-II 6-May-24	7-90 6-May-24	7-90 16-Oct-24	7-90-II 18-May-16	7-90-II 18-Oct-16	7-90-II 8-May-18	7-90-II 8-May-19	7-90-II 8-Oct-19	7-90-II 5-May-20	7-90-II 13-Oct-20	7-90-II 3-May-21	7-90-II 14-Oct-21	7-90-II 25-Oct-22	7-90-II 18-Oct-23
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5	<0.5	<0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**5.2**	< 0.5			
1,1,1-Trichloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5	<0.5	<0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**34.1**	< 0.5			
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5	<0.5	<0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**66.6**	< 0.5			
1,1,2-Trichloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5	<0.5	<0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**36.9**	< 0.5			
1,1-Dichloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5	<0.5	<0.5		**1.1**	**1.8**	**1.1**	**2.2**	**2.3**	< 0.5	**104**	< 0.5			
1,1-Dichloroethylene	µg/L	14		< 0.5	< 0.5	<0.5	<0.5				< 0.5	< 0.5	< 0.5	< 0.5		< 0.5			
Ethylene Dibromide	µg/L	N/A	**10.6**	< 0.2	< 0.2				**18.6**	**53.8**	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2			
1,2-Dichlorobenzene	µg/L	3	< 0.5	< 0.5	< 0.5	<0.5	<0.5		< 0.5	< 0.5	< 0.5	< 0.5	**17.6**	< 0.5		< 0.5			
1,2-Dichloroethane	µg/L	5	< 0.5	< 0.5	< 0.5	<0.5	<0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5			
1,2-Dichloropropane	µg/L	N/A	< 0.5	< 0.5	< 0.5	<0.5	<0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5			
1,3-Dichlorobenzene	µg/L	N/A	< 0.5	< 0.5	< 0.5	<0.5	<0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5			
1,4-Dichlorobenzene	µg/L	1	**1.6**	**1.9**	**1.5**	**2.1**	**4.6**		**3.3**	**4.6**	< 0.5	**4.7**	**5.2**	**5.3**		**7.8**			
Methyl Ethyl Ketone	µg/L	N/A	< 20	< 20	< 20	**2**	**2**		< 20	< 20	< 20	< 20	< 20	< 20		< 20			
Methyl Isobutyl Ketone	µg/L	N/A	< 20	< 20	< 20	<20	<20		< 20	< 20	< 20	< 20	< 20	< 20		< 20			
Acetone	µg/L	N/A	< 30	< 30	**40**	<30	<30		< 30	< 30	< 30	< 30	< 30	< 30		**60**			
Benzene	µg/L	5	**5.1**	**4.7**	**9.6**	**7**	**2.6**	**3.2**	**2.3**	**3.6**	**5.3**	**4.1**	**4.7**	**6.4**	**4.3**	**5.3**	**4.7**	**4.1**	**5.6**
Bromodichloromethane	µg/L	N/A	< 2	< 2	< 2	<2	<2		< 2	< 2	< 2	< 2	< 2	< 2		< 2			
Bromoform	µg/L	N/A	< 5	< 5	< 5	<5	<5		< 5	< 5	< 5	< 5	< 5	< 5		< 5			
Bromomethane	µg/L	N/A	< 0.5	< 0.5	< 0.5	<0.5	<0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5			
Carbon Tetrachloride	µg/L	5	< 0.2	< 0.2	< 0.2	<0.2	<0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2			
Chlorobenzene	µg/L	80	**0.6**		**10.4**				**1.3**	**2.6**	< 0.5	**3.5**	**5.5**	**6.7**		**7**			
Chloroform	µg/L	N/A	< 1	< 1	< 1	<1	<1		< 1	< 1	< 1	< 1	< 1	< 1		< 1			
cis 1,2-Dichloroethene	µg/L	N/A	< 0.5	< 0.5	< 0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5			
cis 1,3-Dichloroethene	µg/L	N/A		< 0.5	< 0.5						< 0.5	< 0.5	< 0.5	< 0.5		< 0.5			
Dibromochloromethane	µg/L	N/A	< 0.5	< 2	< 2	<2	<2		< 0.5	< 0.5	< 2	< 2	< 2	< 2		< 2			
Dichlorodifluoromethane	µg/L	N/A	< 2		< 5				< 2	< 2		< 5							
Ethylbenzene	µg/L	2.4		< 0.5	**28.5**	<0.5	**0.7**	**0.8**			**54.1**	**62.7**	**77.5**	**28.9**	**34.1**	**45.7**	**9.6**	**17.8**	**1.7**
m & p-Xylene	µg/L	N/A	**58.6**	**83.2**	**111**	**25**	**5**	**9**	**50.4**	**140**	**120**	**153**	**204**	**92.6**	**66.6**	**91.3**	< 1.0	**66.6**	**1**
o-Xylene	µg/L	N/A	37.3	**49.9**	**32.1**	**5.8**	**31.6**	**36.6**	**22.7**	**47.3**	**120**	**48.3**	**66.2**	**71**	**36.9**	**43.8**	**53.3**	**29.2**	**48.8**
Toluene	µg/L	N/A	**1**	< 0.5	**6.6**	<0.5	<0.5	**0.5**	**4.2**	**5.7**	**57.4**	**4.2**	**5.3**	**6.2**	**5.2**	**2.5**	**1.2**	< 2	**1.1**
Methyl tert-Butyl Ether	µg/L	N/A	< 2	< 2	**2**				< 2	< 2	< 2	< 2	< 2	< 2		**2**			
Methylene Chloride	µg/L	N/A	< 5			<5	<5		< 5	< 5	< 5		< 5	< 5		< 5			
Vinyl Chloride	µg/L	2				<0.2	<0.2									< 0.2			
Trichloroethylene	µg/L	5				<0.5	<0.5									< 0.5			
Xylene, m,p,o-	µg/L	300														**135**	**53.3**	**95.8**	**50.2**

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	7-90-II 6-May-24	7-90-II 16-Oct-24	11-90 29-May-15	11-90 13-Jul-15	11-90 13-Oct-15	11-90 13-Jul-16	11-90 25-May-17	11-90 20-Jul-17	11-90 18-Oct-17	11-90 8-May-18	11-90 24-Jul-18	11-90 11-Oct-18	11-90 9-May-19	11-90 16-Jul-19	11-90 9-Oct-19	11-90 5-May-20	11-90 13-Jul-20
1,1,1,2-Tetrachloroethane	µg/L	N/A	<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5		< 0.5	< 0.5
1,1,1-Trichloroethane	µg/L	N/A	<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5		< 0.5	< 0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A	<0.5			< 0.5		< 0.5		< 0.5			< 0.4			< 0.5		< 0.5	< 0.5
1,1,2-Trichloroethane	µg/L	N/A	<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5		< 0.5	< 0.5
1,1-Dichloroethane	µg/L	N/A	**1.2**			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5		< 0.5	< 0.5
1,1-Dichloroethylene	µg/L	14	<0.5							< 0.5			< 0.1			< 0.5		< 0.5	< 0.5
Ethylene Dibromide	µg/L	N/A				< 0.2		< 0.5		< 0.2			< 0.1			< 0.2		< 0.2	< 0.2
1,2-Dichlorobenzene	µg/L	3	<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5		< 0.5	< 0.5
1,2-Dichloroethane	µg/L	5	<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5		< 0.5	< 0.5
1,2-Dichloropropane	µg/L	N/A	<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5		< 0.5	< 0.5
1,3-Dichlorobenzene	µg/L	N/A	<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5		< 0.5	< 0.5
1,4-Dichlorobenzene	µg/L	1	**5.4**			< 0.5		< 0.5		< 0.5			< 0.2			< 0.5		< 0.5	< 0.5
Methyl Ethyl Ketone	µg/L	N/A	**3**					< 20		< 20			< 1			< 20		< 20	< 20
Methyl Isobutyl Ketone	µg/L	N/A	<20					< 20		< 20			< 1			< 20		< 20	< 20
Acetone	µg/L	N/A	<30			< 30		< 30		< 30			< 2			< 30		< 30	< 30
Benzene	µg/L	5	**4.5**	**4.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A	<2			< 2		< 2		< 2			< 0.1			< 2		< 2	< 2
Bromoform	µg/L	N/A	<5			< 5		< 5		< 5			< 0.1			< 5		< 5	< 5
Bromomethane	µg/L	N/A	<0.5					< 0.5		< 0.5			< 0.3			< 0.5		< 0.5	< 0.5
Carbon Tetrachloride	µg/L	5	<0.2			< 0.2		< 0.2		< 0.2			< 0.2			< 0.2		< 0.2	< 0.2
Chlorobenzene	µg/L	80				< 0.5		< 0.5					< 0.2			< 0.5		< 0.5	< 0.5
Chloroform	µg/L	N/A	<1			< 1		< 1		< 1			< 0.3			< 1		< 1	< 1
cis 1,2-Dichloroethene	µg/L	N/A				< 0.5		< 0.5		< 0.5			< 0.1			< 0.5		< 0.5	< 0.5
cis 1,3-Dichloroethene	µg/L	N/A				< 0.5				< 0.5			< 0.1			< 0.5		< 0.5	< 0.5
Dibromochloromethane	µg/L	N/A	<2			< 2		< 0.5		< 2			< 0.1			< 2		< 2	< 2
Dichlorodifluoromethane	µg/L	N/A						< 2								< 5			
Ethylbenzene	µg/L	2.4	**41.3**	**40.4**	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	**6**	**97**	< 1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	**52.6**	**43.8**	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.4	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	**4.6**	**5.9**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A				< 2		< 2		< 2			< 1			< 2		< 2	< 2
Methylene Chloride	µg/L	N/A	<5			< 5		< 5					< 0.3					< 5	< 5
Vinyl Chloride	µg/L	2	<0.2																
Trichloroethylene	µg/L	5	<0.5																
Xylene, m,p,o-	µg/L	300																	

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	11-90 13-Oct-20	11-90 3-May-21	11-90 5-Jul-21	11-90 14-Oct-21	11-90 3-May-22	11-90 28-Jul-22	11-90 25-Oct-22	11-90 12-Jul-23	11-90 18-Oct-23	11-90 6-May-24	11-90 29-Jul-24	11-90 16-Oct-24	12-91-I 28-May-15	12-91-I 19-Oct-15	12-91-I 23-May-17	12-91-I 17-Oct-17	12-91-I 8-May-18
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
1,1,1-Trichloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 1.0	< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
1,1,2-Trichloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
1,1-Dichloroethane	µg/L	N/A	< 1.1	< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
1,1-Dichloroethylene	µg/L	14		< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
Ethylene Dibromide	µg/L	N/A		< 0.2	< 0.2			< 0.2		< 0.2			<0.2						
1,2-Dichlorobenzene	µg/L	3		< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
1,2-Dichloroethane	µg/L	5		< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
1,2-Dichloropropane	µg/L	N/A		< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
1,3-Dichlorobenzene	µg/L	N/A		< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
1,4-Dichlorobenzene	µg/L	1		< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
Methyl Ethyl Ketone	µg/L	N/A		< 20	< 20			< 20		< 20			<2						
Methyl Isobutyl Ketone	µg/L	N/A		< 20	< 20			< 20		< 20			<20						
Acetone	µg/L	N/A		< 30	< 30			< 30		< 30			<30						
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A		< 2	< 2			< 2		< 2			<2						
Bromoform	µg/L	N/A		< 5	< 5			< 5		< 5			<5						
Bromomethane	µg/L	N/A		< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
Carbon Tetrachloride	µg/L	5		< 0.2	< 0.2			< 0.2		< 0.2			<0.2						
Chlorobenzene	µg/L	80		< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
Chloroform	µg/L	N/A		< 1	< 1			< 1		< 1			<1						
cis 1,2-Dichloroethene	µg/L	N/A		< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
cis 1,3-Dichloroethene	µg/L	N/A		< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
Dibromochloromethane	µg/L	N/A		< 2	< 2			< 2		< 2			<2						
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 1.0
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A		< 2	< 2			< 2		< 2			<2						
Methylene Chloride	µg/L	N/A		< 5	< 5			< 5		< 5			<5						
Vinyl Chloride	µg/L	2		< 0.2	< 0.2			< 0.2		< 0.2			<0.2						
Trichloroethylene	µg/L	5		< 0.5	< 0.5			< 0.5		< 0.5			<0.5						
Xylene, m,p,o-	µg/L	300		< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	**0**	<1.1					

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	12-91-I 11-Oct-18	12-91-I 8-May-19	12-91-I 8-Oct-19	12-91-I 5-May-20	12-91-I 13-Oct-20	12-91-I 3-May-21	12-91-I 14-Oct-21	12-91-I 3-May-22	12-91-I 25-Oct-22	12-91-I 3-May-23	12-91-I 18-Oct-23	12-91-I 6-May-24	12-91-I 16-Oct-24	12-91-II 28-May-15	12-91-II 19-Oct-15	12-91-II 23-May-17	12-91-II 17-Oct-17
1,1,1,2-Tetrachloroethane	µg/L	N/A				< 0.5	< 0.5												
1,1,1-Trichloroethane	µg/L	N/A				< 0.5	< 0.5												
1,1,2,2 Tetrachloroethane	µg/L	N/A				< 1.0	< 1.0												
1,1,2-Trichloroethane	µg/L	N/A				< 0.5	< 0.5												
1,1-Dichloroethane	µg/L	N/A				< 1.1	< 1.1												
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 0.4	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.1	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300						< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1				

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	12-91-II 8-May-18	12-91-II 11-Oct-18	12-91-II 8-May-19	12-91-II 8-Oct-19	12-91-II 5-May-20	12-91-II 13-Oct-20	12-91-II 3-May-21	12-91-II 14-Oct-21	12-91-II 3-May-22	12-91-II 25-Oct-22	12-91-II 3-May-23	12-91-II 18-Oct-23	12-91-II 6-May-24	12-91-II 16-Oct-24	12-91-III 6-May-24	13-91-I 28-May-15	13-91-I 19-Oct-15
1,1,1,2-Tetrachloroethane	µg/L	N/A					< 0.5	< 0.5											
1,1,1-Trichloroethane	µg/L	N/A					< 0.5	< 0.5											
1,1,2,2 Tetrachloroethane	µg/L	N/A					< 1.0	< 1.0											
1,1,2-Trichloroethane	µg/L	N/A					< 0.5	< 0.5											
1,1-Dichloroethane	µg/L	N/A					< 1.1	< 1.1											
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	**0.5**	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	< 0.4	< 1.0
o-Xylene	µg/L	N/A	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.1	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300							< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	<1.1		

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	13-91-I 23-May-17	13-91-I 16-Oct-17	13-91-I 8-May-18	13-91-I 11-Oct-18	13-91-I 8-May-19	13-19-II 7-Oct-19	13-91-I 7-Oct-19	13-91-I 5-May-20	13-91-I 13-Oct-20	13-91-I 3-May-21	13-91-I 14-Oct-21	13-91-I 3-May-22	13-91-I 25-Oct-22	13-91-I 3-May-23	13-91-I 18-Oct-23	13-91-I 6-May-24	13-91-I 16-Oct-24
1,1,1,2-Tetrachloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1,1-Trichloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1,2,2 Tetrachloroethane	µg/L	N/A								< 1.0	< 1.0								
1,1,2-Trichloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1-Dichloroethane	µg/L	N/A								< 1.1	< 1.1								
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1
o-Xylene	µg/L	N/A	< 0.5	< 0.5		< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Toluene	µg/L	N/A	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300										< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	13-91-II 28-May-15	13-91-II 19-Oct-15	13-91-II 23-May-17	13-91-II 16-Oct-17	13-91-II 11-Oct-18	13-91-II 8-May-19	13-91-II 5-May-20	13-91-II 13-Oct-20	13-91-II 3-May-21	13-91-II 14-Oct-21	13-91-II 3-May-22	13-91-II 25-Oct-22	13-91-II 3-May-23	13-91-II 18-Oct-23	13-91-II 6-May-24	13-91-II 16-Oct-24	14-07 26-May-15
1,1,1,2-Tetrachloroethane	µg/L	N/A							< 0.5	< 0.5									
1,1,1-Trichloroethane	µg/L	N/A							< 0.5	< 0.5									
1,1,2,2 Tetrachloroethane	µg/L	N/A							< 1.0	< 1.0									
1,1,2-Trichloroethane	µg/L	N/A							< 0.5	< 0.5									
1,1-Dichloroethane	µg/L	N/A							< 1.1	< 1.1									
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 1.0
o-Xylene	µg/L	N/A	< 0.1	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300									< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	14-07 15-Oct-15	14-07 23-May-17	14-07 16-Oct-17	14-07 8-May-18	14-07 11-Oct-18	14-07 8-May-19	14-07 8-Oct-19	14-07 5-May-20	14-07 13-Oct-20	14-07 3-May-21	14-07 14-Oct-21	14-07 3-May-22	14-07 25-Oct-22	14-07 3-May-23	14-07 18-Oct-23	14-07 6-May-24	14-07 16-Oct-24
1,1,1,2-Tetrachloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1,1-Trichloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1,2,2 Tetrachloroethane	µg/L	N/A								< 1.0	< 1.0								
1,1,2-Trichloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1-Dichloroethane	µg/L	N/A								< 1.1	< 1.1								
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1
o-Xylene	µg/L	N/A	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300										< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	15-91-I 28-May-15	15-91-I 15-Oct-15	15-91-I 23-May-17	15-91-I 16-Oct-17	15-91-I 8-May-18	15-91-I 11-Oct-18	15-91-I 8-May-19	15-91-I 7-Oct-19	15-91-I 5-May-20	15-91-I 13-Oct-20	15-91-I 3-May-21	15-91-I 14-Oct-21	15-91-I 3-May-22	15-91-I 25-Oct-22	15-91-I 3-May-23	15-91-I 18-Oct-23	15-91-I 6-May-24
1,1,1,2-Tetrachloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1,1-Trichloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1,2,2 Tetrachloroethane	µg/L	N/A									< 1.0	< 1.0							
1,1,2-Trichloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1-Dichloroethane	µg/L	N/A									< 1.1	< 1.1							
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	< 0.4	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1
o-Xylene	µg/L	N/A	< 0.1	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	**6.6**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.9**	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300											< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	15-91-I 16-Oct-24	15-91-II 28-May-15	15-91-II 15-Oct-15	15-91-II 23-May-17	15-91-II 16-Oct-17	15-91-II 8-May-18	15-91-II 11-Oct-18	15-91-II 8-May-19	15-91-II 7-Oct-19	15-91-II 5-May-20	15-91-II 13-Oct-20	15-91-II 3-May-21	15-91-II 3-May-22	15-91-II 3-May-23	15-91-II 18-Oct-23	15-91-II 6-May-24	15-91-II 16-Oct-24
1,1,1,2-Tetrachloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1,1-Trichloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1,2,2 Tetrachloroethane	µg/L	N/A										< 1.0	< 1.0						
1,1,2-Trichloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1-Dichloroethane	µg/L	N/A										< 1.1	< 1.1						
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	**0.6**	**0.7**	**0.5**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.6**	< 0.5	**0.7**	**0.7**	< 0.5	**0.6**	**0.6**	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	<1	< 0.4	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1
o-Xylene	µg/L	N/A	<0.5	< 0.1	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Toluene	µg/L	N/A	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1											< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	16-91-I 27-May-15	16-91-I 15-Oct-15	16-91-I 23-May-17	16-91-I 17-Oct-17	16-91-I 8-May-18	16-91-I 11-Oct-18	16-91-I 9-May-19	16-91-I 8-Oct-19	16-91-I 5-May-20	16-91-I 13-Oct-20	16-91-I 3-May-21	16-91-I 14-Oct-21	16-91-I 3-May-22	16-91-I 25-Oct-22	16-91-I 3-May-23	16-91-I 18-Oct-23	16-91-I 6-May-24
1,1,1,2-Tetrachloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1,1-Trichloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1,2,2 Tetrachloroethane	µg/L	N/A									< 1.0	< 1.0							
1,1,2-Trichloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1-Dichloroethane	µg/L	N/A									< 1.1	< 1.1							
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	**1**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	**0.7**
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1
o-Xylene	µg/L	N/A	< 0.5	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**1.7**	< 0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300											< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	16-91-I 16-Oct-24	16-91-II 27-May-15	16-91-II 15-Oct-15	16-91-II 23-May-17	16-91-II 17-Oct-17	16-91-II 8-May-18	16-91-II 11-Oct-18	16-91-II 9-May-19	16-91-II 5-May-20	16-91-II 3-May-21	16-91-II 3-May-23	16-91-II 6-May-24	17-91-I 26-May-15	17-91-I 15-Oct-15	17-91-I 23-May-17	17-91-I 16-Oct-17	17-91-I 8-May-18
1,1,1,2-Tetrachloroethane	µg/L	N/A									< 0.5								
1,1,1-Trichloroethane	µg/L	N/A									< 0.5								
1,1,2,2 Tetrachloroethane	µg/L	N/A									< 1.0								
1,1,2-Trichloroethane	µg/L	N/A									< 0.5								
1,1-Dichloroethane	µg/L	N/A									< 1.1								
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	**1.7**	**1.5**	< 0.5	**3.4**	**1.5**	< 0.5	< 0.5	**1.4**	**1.7**	< 0.5	**2.1**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	<1	< 1.0	**0.8**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	<0.5	< 0.5	< 0.1	< 0.5	< 0.5		< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 1.0
Toluene	µg/L	N/A	<0.5	**0.7**	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1									< 1.1	< 1.1	<1.1					

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	17-91-I 10-Oct-18	17-91-I 8-May-19	17-91-I 7-Oct-19	17-91-I 5-May-20	17-91-I 13-Oct-20	17-91-I 3-May-21	17-91-I 14-Oct-21	17-91-I 3-May-22	17-91-I 25-Oct-22	17-91-I 3-May-23	17-91-I 18-Oct-23	17-91-I 6-May-24	17-91-I (Dup) 6-May-24	17-91-I 16-Oct-24	17-91-II 26-May-15	17-91-II 15-Oct-15	17-91-II 23-May-17
1,1,1,2-Tetrachloroethane	µg/L	N/A				< 0.5	< 0.5												
1,1,1-Trichloroethane	µg/L	N/A				< 0.5	< 0.5												
1,1,2,2 Tetrachloroethane	µg/L	N/A				< 1.0	< 1.0												
1,1,2-Trichloroethane	µg/L	N/A				< 0.5	< 0.5												
1,1-Dichloroethane	µg/L	N/A				< 1.1	< 1.1												
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	< 1.0	< 0.4	< 1.0
o-Xylene	µg/L	N/A	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300						< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	<1.1			

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	17-91-II 16-Oct-17	17-91-II 8-May-18	17-91-II 10-Oct-18	17-91-II 8-May-19	17-91-II 7-Oct-19	17-91-II 5-May-20	17-91-II 13-Oct-20	17-91-II 3-May-21	17-91-II 14-Oct-21	17-91-II 3-May-22	17-91-II 25-Oct-22	17-91-II 3-May-23	17-91-II 18-Oct-23	17-91-II 6-May-24	17-91-II 16-Oct-24	18-91 28-May-15	18-91 15-Oct-15
1,1,1,2-Tetrachloroethane	µg/L	N/A						< 0.5	< 0.5										
1,1,1-Trichloroethane	µg/L	N/A						< 0.5	< 0.5										
1,1,2,2 Tetrachloroethane	µg/L	N/A						< 1.0	< 1.0										
1,1,2-Trichloroethane	µg/L	N/A						< 0.5	< 0.5										
1,1-Dichloroethane	µg/L	N/A						< 1.1	< 1.1										
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 0.4	< 0.4
o-Xylene	µg/L	N/A	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.1	< 0.1
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300								< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1		

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	18-91 24-May-17	18-91 16-Oct-17	18-91 8-May-18	18-91 11-Oct-18	18-91 8-May-19	18-91 7-Oct-19	18-91 5-May-20	18-91 13-Oct-20	18-91 3-May-21	18-91 14-Oct-21	18-91 3-May-22	18-91 25-Oct-22	18-91 3-May-23	18-91 18-Oct-23	18-91 6-May-24	18-91 16-Oct-24	19-91 28-May-15
1,1,1,2-Tetrachloroethane	µg/L	N/A							< 0.5	< 0.5									
1,1,1-Trichloroethane	µg/L	N/A							< 0.5	< 0.5									
1,1,2,2 Tetrachloroethane	µg/L	N/A							< 1.0	< 1.0									
1,1,2-Trichloroethane	µg/L	N/A							< 0.5	< 0.5									
1,1-Dichloroethane	µg/L	N/A							< 1.1	< 1.1									
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.6**	<0.5	<0.5	<0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 0.4
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.1
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300									< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	19-91 15-Oct-15	19-91 24-May-17	19-91 16-Oct-17	19-91 8-May-18	19-91 11-Oct-18	19-91 8-May-19	19-91 8-Oct-19	19-91 5-May-20	19-91 13-Oct-20	19-91 3-May-21	19-91 14-Oct-21	19-91 3-May-22	19-91 25-Oct-22	19-91 3-May-23	19-91 18-Oct-23	19-91 6-May-24	19-91 16-Oct-24
1,1,1,2-Tetrachloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1,1-Trichloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1,2,2 Tetrachloroethane	µg/L	N/A								< 1.0	< 1.0								
1,1,2-Trichloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1-Dichloroethane	µg/L	N/A								< 1.1	< 1.1								
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1
o-Xylene	µg/L	N/A	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**1.1**	<0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300										< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	19-91-II (Dup) 16-Oct-24	20-91-I 28-May-15	20-91-I 15-Oct-15	20-91-I 23-May-17	20-91-I 16-Oct-17	20-91-I 8-May-18	20-91-I 8-May-19	20-91-I 5-May-20	20-91-I 13-Oct-20	20-91-I 3-May-21	20-91-I 14-Oct-21	20-91-I 25-Oct-22	20-91-I 3-May-23	20-91-I 18-Oct-23	20-91-I 6-May-24	20-91-I 16-Oct-24	20-91-II 28-May-15
1,1,1,2-Tetrachloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1,1-Trichloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1,2,2 Tetrachloroethane	µg/L	N/A								< 1.0	< 1.0								
1,1,2-Trichloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1-Dichloroethane	µg/L	N/A								< 1.1	< 1.1								
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**1.7**	<0.5	<0.5	<0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5
m & p-Xylene	µg/L	N/A	<1	< 0.4	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 0.4
o-Xylene	µg/L	N/A	<0.5	< 0.1	< 0.1	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.1
Toluene	µg/L	N/A	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1									< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	20-91-II 15-Oct-15	20-91-II 23-May-17	20-91-II 16-Oct-17	20-91-II 8-May-18	20-91-II 11-Oct-18	20-91-II 8-May-19	20-91-II 7-Oct-19	20-91-II 5-May-20	20-91-II 13-Oct-20	20-91-II 3-May-21	20-91-II 14-Oct-21	20-91-II 3-May-22	20-91-II 25-Oct-22	20-91-II 3-May-23	20-91-II 18-Oct-23	20-91-II 6-May-24	20-91-II 16-Oct-24
1,1,1,2-Tetrachloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1,1-Trichloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1,2,2 Tetrachloroethane	µg/L	N/A								< 1.0	< 1.0								
1,1,2-Trichloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1-Dichloroethane	µg/L	N/A								< 1.1	< 1.1								
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1
o-Xylene	µg/L	N/A	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300										< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	20-91-III 28-May-15	20-91-III 15-Oct-15	20-91-III 23-May-17	20-91-III 16-Oct-17	20-91-III 8-May-18	20-91-III 11-Oct-18	20-91-III 8-May-19	20-91-III 7-Oct-19	20-91-III 5-May-20	20-91-III 13-Oct-20	20-91-III 3-May-21	20-91-III 14-Oct-21	20-91-III 3-May-22	20-91-III 25-Oct-22	20-91-III 3-May-23	20-91-III 18-Oct-23	20-91-III 6-May-24
1,1,1,2-Tetrachloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1,1-Trichloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1,2,2 Tetrachloroethane	µg/L	N/A									< 1.0	< 1.0							
1,1,2-Trichloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1-Dichloroethane	µg/L	N/A									< 1.1	< 1.1							
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	< 0.4	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1
o-Xylene	µg/L	N/A	< 0.1	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300											< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	20-91-III 16-Oct-24	21-91-I 29-May-15	21-91-I 15-Oct-15	21-91-I 23-May-17	21-91-I 17-Oct-17	21-91-I 8-May-18	21-91-I 11-Oct-18	21-91-I 9-May-19	21-91-I 8-Oct-19	21-91-I 5-May-20	21-91-I 13-Oct-20	21-91-I 3-May-21	21-91-I 14-Oct-21	21-91-I 3-May-22	21-91-I 25-Oct-22	21-91-I 3-May-23	21-91-I 18-Oct-23
1,1,1,2-Tetrachloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1,1-Trichloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1,2,2 Tetrachloroethane	µg/L	N/A										< 1.0	< 1.0						
1,1,2-Trichloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1-Dichloroethane	µg/L	N/A										< 1.1	< 1.1						
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
m & p-Xylene	µg/L	N/A	<1	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1
o-Xylene	µg/L	N/A	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Toluene	µg/L	N/A	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1											< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	21-91-I 6-May-24	21-91-I 16-Oct-24	21-91-II 29-May-15	21-91-II 15-Oct-15	21-91-II 23-May-17	21-91-II 17-Oct-17	21-91-II 8-May-18	21-91-II 11-Oct-18	21-91-II 9-May-19	21-91-II 8-Oct-19	21-91-II 5-May-20	21-91-II 13-Oct-20	21-91-II 3-May-21	21-91-II 14-Oct-21	21-91-II 3-May-22	21-91-II 25-Oct-22	21-91-II 3-May-23
1,1,1,2-Tetrachloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1,1-Trichloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1,2,2 Tetrachloroethane	µg/L	N/A											< 1.0	< 1.0					
1,1,2-Trichloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1-Dichloroethane	µg/L	N/A											< 1.1	< 1.1					
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	**0.6**	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	<1	<1	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 1.0		< 0.5	< 0.5	< 0.5	< 0.5	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1	<1.1											**1.2**	< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	21-91-II 18-Oct-23	21-91-II 6-May-24	21-91-II 16-Oct-24	21-91-III 29-May-15	21-91-III 15-Oct-15	21-91-III 23-May-17	21-91-III 17-Oct-17	21-91-III 8-May-18	21-91-III 11-Oct-18	21-91-III 9-May-19	21-91-III 8-Oct-19	21-91-III 5-May-20	21-91-III 13-Oct-20	21-91-III 3-May-21	21-91-III 14-Oct-21	21-91-III 3-May-22	21-91-III 25-Oct-22
1,1,1,2-Tetrachloroethane	µg/L	N/A												< 0.5	< 0.5				
1,1,1-Trichloroethane	µg/L	N/A												< 0.5	< 0.5				
1,1,2,2 Tetrachloroethane	µg/L	N/A												< 1.0	< 1.0				
1,1,2-Trichloroethane	µg/L	N/A												< 0.5	< 0.5				
1,1-Dichloroethane	µg/L	N/A												< 1.1	< 1.1				
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	<0.5	<0.5	< 0.5	0.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.5**	**0.5**	**0.5**
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	**0.7**	**1**	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	<1	<1	<1	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	**0.7**	**1.2**	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1	**1.3**	<1.1											< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	21-91-III 3-May-23	21-91-III 18-Oct-23	21-91-III 16-Oct-24	21-91-III (Dup) 16-Oct-24	23-07 28-May-15	23-07 15-Oct-15	23-07 24-May-17	23-07 16-Oct-17	23-07 8-May-18	23-07 11-Oct-18	23-07 8-May-19	23-07 8-Oct-19	23-07 5-May-20	23-07 13-Oct-20	23-07 3-May-21	23-07 14-Oct-21	23-07 3-May-22
1,1,1,2-Tetrachloroethane	µg/L	N/A													< 0.5	< 0.5			
1,1,1-Trichloroethane	µg/L	N/A													< 0.5	< 0.5			
1,1,2,2 Tetrachloroethane	µg/L	N/A													< 1.0	< 1.0			
1,1,2-Trichloroethane	µg/L	N/A													< 0.5	< 0.5			
1,1-Dichloroethane	µg/L	N/A													< 1.1	< 1.1			
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	**0.6**	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	<1	<1	<1	< 0.4	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	<0.5	<0.5	<0.5	< 0.1	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	< 1.1	<1.1	<1.1	<1.1											< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	23-07 25-Oct-22	23-07 3-May-23	23-07 18-Oct-23	23-07 6-May-24	23-07 (Dup) 6-May-24	23-07 16-Oct-24	24-91 28-May-15	24-91 15-Oct-15	24-91 24-May-17	24-91 16-Oct-17	24-91 8-May-18	24-91 11-Oct-18	24-91 8-May-19	24-91 8-Oct-19	25-91 28-May-15	25-91 15-Oct-15	25-91 24-May-17
1,1,1,2-Tetrachloroethane	µg/L	N/A																	
1,1,1-Trichloroethane	µg/L	N/A																	
1,1,2,2 Tetrachloroethane	µg/L	N/A																	
1,1,2-Trichloroethane	µg/L	N/A																	
1,1-Dichloroethane	µg/L	N/A																	
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	<1	<1	<1	<1	< 0.4	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 0.4	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.1	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.1	< 0.1	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	< 1.1	< 1.1	<1.1	<1.1	<1.1	<1.1											

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	25-91 17-Oct-17	25-91 8-May-18	25-91 11-Oct-18	25-91 8-May-19	25-91 8-Oct-19	25-91 5-May-20	25-91 13-Oct-20	25-91 3-May-21	25-91 14-Oct-21	25-91 3-May-22	25-91 25-Oct-22	25-91 3-May-23	25-91 18-Oct-23	25-91 6-May-24	25-91 16-Oct-24	25-96 28-May-15	25-96 15-Oct-15
1,1,1,2-Tetrachloroethane	µg/L	N/A						< 0.5	< 0.5										
1,1,1-Trichloroethane	µg/L	N/A						< 0.5	< 0.5										
1,1,2,2 Tetrachloroethane	µg/L	N/A						< 1.0	< 1.0										
1,1,2-Trichloroethane	µg/L	N/A						< 0.5	< 0.5										
1,1-Dichloroethane	µg/L	N/A						< 1.1	< 1.1										
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 0.4	< 0.4
o-Xylene	µg/L	N/A	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.1	< 0.1
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300								< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1		

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	25-96 24-May-17	25-96 16-Oct-17	25-96 8-May-18	25-96 11-Oct-18	25-96 8-May-19	25-96 7-Oct-19	25-96 5-May-20	25-96 13-Oct-20	25-96 3-May-21	25-96 14-Oct-21	25-96 3-May-22	25-96 25-Oct-22	25-96 3-May-23	25-96 18-Oct-23	25-96 6-May-24	25-96 16-Oct-24	27-93 28-May-15
1,1,1,2-Tetrachloroethane	µg/L	N/A							< 0.5	< 0.5									
1,1,1-Trichloroethane	µg/L	N/A							< 0.5	< 0.5									
1,1,2,2 Tetrachloroethane	µg/L	N/A							< 1.0	< 1.0									
1,1,2-Trichloroethane	µg/L	N/A							< 0.5	< 0.5									
1,1-Dichloroethane	µg/L	N/A							< 1.1	< 1.1									
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 0.4
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.1
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300									< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	27-93 15-Oct-15	27-93 24-May-17	27-93 16-Oct-17	27-93 8-May-18	27-93 11-Oct-18	27-93 8-May-19	27-93 7-Oct-19	27-93 5-May-20	27-93 13-Oct-20	27-93 3-May-21	27-93 14-Oct-21	27-93 3-May-22	27-93 25-Oct-22	27-93 3-May-23	27-93 18-Oct-23	27-93 6-May-24	27-93 (Dup) 6-May-24
1,1,1,2-Tetrachloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1,1-Trichloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1,2,2 Tetrachloroethane	µg/L	N/A								< 1.0	< 1.0								
1,1,2-Trichloroethane	µg/L	N/A								< 0.5	< 0.5								
1,1-Dichloroethane	µg/L	N/A								< 1.1	< 1.1								
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.8**	<0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1
o-Xylene	µg/L	N/A	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.9**	<0.5	<0.5	<0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300										< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	27-93 16-Oct-24	28-93 28-May-15	28-93 19-Oct-15	28-93 24-May-17	28-93 16-Oct-17	28-93 8-May-18	28-93 11-Oct-18	28-93 8-May-19	28-93 7-Oct-19	28-93 5-May-20	28-93 13-Oct-20	28-93 3-May-21	28-93 14-Oct-21	28-93 3-May-22	28-93 25-Oct-22	28-93 3-May-23	28-93 18-Oct-23
1,1,1,2-Tetrachloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1,1-Trichloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1,2,2 Tetrachloroethane	µg/L	N/A										< 1.0	< 1.0						
1,1,2-Trichloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1-Dichloroethane	µg/L	N/A										< 1.1	< 1.1						
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
m & p-Xylene	µg/L	N/A	<1	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1
o-Xylene	µg/L	N/A	<0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Toluene	µg/L	N/A	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1											< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	28-93 6-May-24	28-93 16-Oct-24	29-93 28-May-15	29-93 15-Oct-15	29-93 24-May-17	29-93 17-Oct-17	29-93 8-May-18	29-93 11-Oct-18	29-93 9-May-19	29-93 7-Oct-19	29-93 5-May-20	29-93 13-Oct-20	29-93 3-May-21	29-93 14-Oct-21	29-93 3-May-22	29-93 25-Oct-22	29-93 3-May-23
1,1,1,2-Tetrachloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1,1-Trichloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1,2,2 Tetrachloroethane	µg/L	N/A											< 1.0	< 1.0					
1,1,2-Trichloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1-Dichloroethane	µg/L	N/A											< 1.1	< 1.1					
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	<1	<1	< 0.4	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	<0.5	<0.5	< 0.1	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1	<1.1											< 1.1	< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	29-93 18-Oct-23	29-93 6-May-24	29-93 16-Oct-24	30-93 26-May-15	30-93 20-Oct-15	30-93 24-May-17	30-93 18-Oct-17	30-93 8-May-18	30-93 11-Oct-18	30-93 9-May-19	30-93 7-Oct-19	30-93 5-May-20	30-93 13-Oct-20	30-93 3-May-21	30-93 14-Oct-21	30-93 3-May-22	30-93 25-Oct-22
1,1,1,2-Tetrachloroethane	µg/L	N/A												< 0.5	< 0.5				
1,1,1-Trichloroethane	µg/L	N/A												< 0.5	< 0.5				
1,1,2,2 Tetrachloroethane	µg/L	N/A												< 1.0	< 1.0				
1,1,2-Trichloroethane	µg/L	N/A												< 0.5	< 0.5				
1,1-Dichloroethane	µg/L	N/A												< 1.1	< 1.1				
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1	<1.1	<1.1											< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	30-93 3-May-23	30-93 18-Oct-23	30-93 6-May-24	30-93 16-Oct-24	31-93 26-May-15	31-93 20-Oct-15	31-93 24-May-17	31-93 18-Oct-17	31-93 8-May-18	31-93 11-Oct-18	31-93 9-May-19	31-93 7-Oct-19	31-93 5-May-20	31-93 13-Oct-20	31-93 3-May-21	31-93 14-Oct-21	31-93 3-May-22
1,1,1,2-Tetrachloroethane	µg/L	N/A													< 0.5	< 0.5			
1,1,1-Trichloroethane	µg/L	N/A													< 0.5	< 0.5			
1,1,2,2 Tetrachloroethane	µg/L	N/A													< 1.0	< 1.0			
1,1,2-Trichloroethane	µg/L	N/A													< 0.5	< 0.5			
1,1-Dichloroethane	µg/L	N/A													< 1.1	< 1.1			
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	< 1.1	<1.1	<1.1	<1.1											< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	31-93 25-Oct-22	31-93 3-May-23	31-93 18-Oct-23	31-93 6-May-24	31-93 16-Oct-24	32-93-I 24-May-17	32-93-I 19-Jul-17	32-93-I 17-Oct-17	32-93-I 8-May-18	32-93-I 24-Jul-18	32-93-I 11-Oct-18	32-93-I 8-May-19	32-93-I 15-Jul-19	32-93-I 9-Oct-19	32-93-I 5-May-20	32-93-I 13-Jul-20	32-93-I 13-Oct-20
1,1,1,2-Tetrachloroethane	µg/L	N/A							< 0.5			< 0.1			< 0.5		< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	µg/L	N/A							< 0.5			< 0.1			< 0.5		< 0.5	< 0.5	< 0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A							< 0.5			< 0.4			< 0.5		< 1.0	< 0.5	< 1.0
1,1,2-Trichloroethane	µg/L	N/A							< 0.5			< 0.1			< 0.5		< 0.5	< 0.5	< 0.5
1,1-Dichloroethane	µg/L	N/A							< 0.5			< 0.1			< 0.5		< 1.1	< 0.5	< 1.1
1,1-Dichloroethylene	µg/L	14							< 0.5			< 0.1			< 0.5			< 0.5	
Ethylene Dibromide	µg/L	N/A							< 0.2			< 0.1			< 0.2			< 0.2	
1,2-Dichlorobenzene	µg/L	3							< 0.5			< 0.1			< 0.5			< 0.5	
1,2-Dichloroethane	µg/L	5							< 0.5			< 0.1			< 0.5			< 0.5	
1,2-Dichloropropane	µg/L	N/A							< 0.5			< 0.1			< 0.5			< 0.5	
1,3-Dichlorobenzene	µg/L	N/A							< 0.5			< 0.1			< 0.5			< 0.5	
1,4-Dichlorobenzene	µg/L	1							< 0.5			< 0.2			< 0.5			< 0.5	
Methyl Ethyl Ketone	µg/L	N/A							< 20			< 1			< 20			< 20	
Methyl Isobutyl Ketone	µg/L	N/A							< 20	< 1.0		< 1			< 20			< 20	
Acetone	µg/L	N/A							< 30			< 2			< 30			< 30	
Benzene	µg/L	5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A							< 2			< 0.1			< 2			< 2	
Bromoform	µg/L	N/A							< 5			< 0.1			< 5			< 5	
Bromomethane	µg/L	N/A							< 0.5			< 0.3			< 0.5			< 0.5	
Carbon Tetrachloride	µg/L	5							< 0.2			< 0.2			< 0.2			< 0.2	
Chlorobenzene	µg/L	80										< 0.2			< 0.5			< 0.5	
Chloroform	µg/L	N/A							< 1			< 0.3			< 1			< 1	
cis 1,2-Dichloroethene	µg/L	N/A							< 0.5			< 0.1			< 0.5			< 0.5	
cis 1,3-Dichloroethene	µg/L	N/A							< 0.5			< 0.1			< 0.5			< 0.5	
Dibromochloromethane	µg/L	N/A							< 2			< 0.1			< 2			< 2	
Dichlorodifluoromethane	µg/L	N/A													< 5				
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	<1	<1	<1	< 1.0	< 1.0	< 0.5	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 1.1	< 1.0	< 0.4	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A							< 2			< 1			< 2			< 2	
Methylene Chloride	µg/L	N/A										< 0.3						< 5	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	< 1.1	< 1.1	<1.1	<1.1	<1.1												

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	32-93-I 3-May-21	32-93-I 14-Oct-21	32-93-I 25-Oct-22	32-93-I 12-Jul-23	32-93-I 18-Oct-23	32-93-I 6-May-24	32-93-I 29-Jul-24	32-93-I 16-Oct-24	32-93-II 27-May-15	32-93-II 14-Jul-15	32-93-II 13-Oct-15	32-93-II 13-Jul-16	32-93-II 24-May-17	32-93-II 19-Jul-17	32-93-II 17-Oct-17	32-93-II 8-May-18	32-93-II 24-Jul-18
1,1,1,2-Tetrachloroethane	µg/L	N/A				< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1
1,1,1-Trichloroethane	µg/L	N/A				< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1
1,1,2,2 Tetrachloroethane	µg/L	N/A				< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.4
1,1,2-Trichloroethane	µg/L	N/A				< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1
1,1-Dichloroethane	µg/L	N/A				< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1
1,1-Dichloroethylene	µg/L	14				< 0.5			<0.5							< 0.5			< 0.1
Ethylene Dibromide	µg/L	N/A				< 0.2			<0.2			< 0.2		< 0.5		< 0.2			< 0.1
1,2-Dichlorobenzene	µg/L	3				< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1
1,2-Dichloroethane	µg/L	5				< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1
1,2-Dichloropropane	µg/L	N/A				< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1
1,3-Dichlorobenzene	µg/L	N/A				< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1
1,4-Dichlorobenzene	µg/L	1				< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.2
Methyl Ethyl Ketone	µg/L	N/A				< 20			<2					< 20		< 20			< 1
Methyl Isobutyl Ketone	µg/L	N/A				< 20			<20					< 20		< 20	< 1.0		< 1
Acetone	µg/L	N/A				< 30			<30			< 30		< 30		< 30			< 2
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A				< 2			<2			< 2		< 2		< 2			< 0.1
Bromoform	µg/L	N/A				< 5			<5			< 5		< 5		< 5			< 0.1
Bromomethane	µg/L	N/A				< 0.5			<0.5					< 0.5		< 0.5			< 0.3
Carbon Tetrachloride	µg/L	5				< 0.2			<0.2			< 0.2		< 0.2		< 0.2			< 0.2
Chlorobenzene	µg/L	80				< 0.5			<0.5			< 0.5		< 0.5					< 0.2
Chloroform	µg/L	N/A				< 1			<1			< 1		< 1		< 1			< 0.3
cis 1,2-Dichloroethene	µg/L	N/A				< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1
cis 1,3-Dichloroethene	µg/L	N/A				< 0.5			<0.5			< 0.5				< 0.5			< 0.1
Dibromochloromethane	µg/L	N/A				< 2			<2			< 2		< 0.5		< 2			< 0.1
Dichlorodifluoromethane	µg/L	N/A												< 2					
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	< 1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 0.5	< 1.0	< 0.4
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 1.1	< 1.0	< 0.4
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1
Methyl tert-Butyl Ether	µg/L	N/A				< 2			<2			< 2		< 2		< 2			< 1
Methylene Chloride	µg/L	N/A				< 5			<5		< 5								< 0.3
Vinyl Chloride	µg/L	2				< 0.2			<0.2										
Trichloroethylene	µg/L	5				< 0.5			<0.5										
Xylene, m,p,o-	µg/L	300	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	**0**	<1.1									

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	32-93-II 11-Oct-18	32-93-II 8-May-19	32-93-II 5-May-20	32-93-II 13-Oct-20	32-93-II 3-May-21	32-93-II 5-Jul-21	32-93-II 14-Oct-21	32-93-II 3-May-22	32-93-II 28-Jul-22	32-93-II 18-Oct-23	32-93-II 6-May-24	32-93-II 16-Oct-24	32-93-III 27-May-15	32-93-III 14-Jul-15	32-93-III 24-May-17	32-93-III 19-Jul-17	32-93-III 17-Oct-17
1,1,1,2-Tetrachloroethane	µg/L	N/A			< 0.5	< 0.5		< 0.5		< 0.5	< 0.5					< 0.5		< 0.5	
1,1,1-Trichloroethane	µg/L	N/A			< 0.5	< 0.5		< 0.5		< 0.5	< 0.5					< 0.5		< 0.5	
1,1,2,2 Tetrachloroethane	µg/L	N/A			< 1.0	< 1.0		< 0.5		< 0.5	< 0.5					< 0.5		< 0.5	
1,1,2-Trichloroethane	µg/L	N/A			< 0.5	< 0.5		< 0.5		< 0.5	< 0.5					< 0.5		< 0.5	
1,1-Dichloroethane	µg/L	N/A			< 1.1	< 1.1		< 0.5		< 0.5	< 0.5					< 0.5		< 0.5	
1,1-Dichloroethylene	µg/L	14						< 0.5		< 0.5	< 0.5							< 0.5	
Ethylene Dibromide	µg/L	N/A						< 0.2		< 0.2	< 0.2					< 0.2		< 0.2	
1,2-Dichlorobenzene	µg/L	3						< 0.5		< 0.5	< 0.5					< 0.5		< 0.5	
1,2-Dichloroethane	µg/L	5						< 0.5		< 0.5	< 0.5					< 0.5		< 0.5	
1,2-Dichloropropane	µg/L	N/A						< 0.5		< 0.5	< 0.5					< 0.5		< 0.5	
1,3-Dichlorobenzene	µg/L	N/A						< 0.5		< 0.5	< 0.5					< 0.5		< 0.5	
1,4-Dichlorobenzene	µg/L	1						< 0.5		< 0.5	< 0.5					< 0.5		< 0.5	
Methyl Ethyl Ketone	µg/L	N/A						< 20		< 20	< 20							< 20	
Methyl Isobutyl Ketone	µg/L	N/A						< 20		< 20	< 20							< 20	
Acetone	µg/L	N/A						< 30		< 30	< 30					< 30		< 30	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A						< 2		< 2	< 2					< 2		< 2	
Bromoform	µg/L	N/A						< 5		< 5	< 5					< 5		< 5	
Bromomethane	µg/L	N/A						< 0.5		< 0.5	< 0.5							< 0.5	
Carbon Tetrachloride	µg/L	5						< 0.2		< 0.2	< 0.2					< 0.2		< 0.2	
Chlorobenzene	µg/L	80						< 0.5		< 0.5	< 0.5					< 0.5			
Chloroform	µg/L	N/A						< 1		< 1	< 1					< 1		< 1	
cis 1,2-Dichloroethene	µg/L	N/A						< 0.5		< 0.5	< 0.5					< 0.5		< 0.5	
cis 1,3-Dichloroethene	µg/L	N/A						< 0.5		< 0.5	< 0.5					< 0.5		< 0.5	
Dibromochloromethane	µg/L	N/A						< 2		< 2	< 2					< 2		< 2	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A						< 2		< 2	< 2					< 2		< 2	
Methylene Chloride	µg/L	N/A						< 5		< 5	< 5								
Vinyl Chloride	µg/L	2						< 0.2		< 0.2	< 0.2								
Trichloroethylene	µg/L	5						< 0.5		< 0.5	< 0.5								
Xylene, m,p,o-	µg/L	300					< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1					

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	32-93-III 8-May-18	32-93-III 8-May-19	32-93-III 5-May-20	32-93-III 3-May-21	32-93-III 3-May-22	35-93-I 26-May-15	35-93-I 14-Oct-15	35-93-I 24-May-17	35-93-I 16-Oct-17	35-93-I 8-May-18	35-93-I 11-Oct-18	35-93-I 10-May-19	35-93-I 9-Oct-19	35-93-I 5-May-20	35-93-I 13-Oct-20	35-93-I 3-May-21	35-93-I 14-Oct-21
1,1,1,2-Tetrachloroethane	µg/L	N/A			< 0.5		< 0.5									< 0.5	< 0.5		
1,1,1-Trichloroethane	µg/L	N/A			< 0.5		< 0.5									< 0.5	< 0.5		
1,1,2,2 Tetrachloroethane	µg/L	N/A			< 1.0		< 0.5									< 1.0	< 1.0		
1,1,2-Trichloroethane	µg/L	N/A			< 0.5		< 0.5									< 0.5	< 0.5		
1,1-Dichloroethane	µg/L	N/A			< 1.1		< 0.5									< 1.1	< 1.1		
1,1-Dichloroethylene	µg/L	14					< 0.5												
Ethylene Dibromide	µg/L	N/A					< 0.2												
1,2-Dichlorobenzene	µg/L	3					< 0.5												
1,2-Dichloroethane	µg/L	5					< 0.5												
1,2-Dichloropropane	µg/L	N/A					< 0.5												
1,3-Dichlorobenzene	µg/L	N/A					< 0.5												
1,4-Dichlorobenzene	µg/L	1					< 0.5												
Methyl Ethyl Ketone	µg/L	N/A					< 20												
Methyl Isobutyl Ketone	µg/L	N/A					< 20												
Acetone	µg/L	N/A					< 30												
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A					< 2												
Bromoform	µg/L	N/A					< 5												
Bromomethane	µg/L	N/A					< 0.5												
Carbon Tetrachloride	µg/L	5					< 0.2												
Chlorobenzene	µg/L	80					< 0.5												
Chloroform	µg/L	N/A					< 1												
cis 1,2-Dichloroethene	µg/L	N/A					< 0.5												
cis 1,3-Dichloroethene	µg/L	N/A					< 0.5												
Dibromochloromethane	µg/L	N/A					< 2												
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A					< 2												
Methylene Chloride	µg/L	N/A					< 5												
Vinyl Chloride	µg/L	2					< 0.2												
Trichloroethylene	µg/L	5					< 0.5												
Xylene, m,p,o-	µg/L	300				< 1.1	< 1.1											< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	35-93-I 3-May-22	35-93-I 25-Oct-22	35-93-I 3-May-23	35-93-I 18-Oct-23	35-93-I 6-May-24	35-93-I 16-Oct-24	35-93-I (Dup) 16-Oct-24	35-93-II 26-May-15	35-93-II 14-Oct-15	35-93-II 24-May-17	35-93-II 16-Oct-17	35-93-II 8-May-18	35-93-II 11-Oct-18	35-93-II 10-May-19	35-93-II 7-Oct-19	35-93-II 5-May-20	35-93-II 13-Oct-20
1,1,1,2-Tetrachloroethane	µg/L	N/A																< 0.5	< 0.5
1,1,1-Trichloroethane	µg/L	N/A																< 0.5	< 0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A																< 1.0	< 1.0
1,1,2-Trichloroethane	µg/L	N/A																< 0.5	< 0.5
1,1-Dichloroethane	µg/L	N/A																< 1.1	< 1.1
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	<1.1										

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	35-93-II 3-May-21	35-93-II 14-Oct-21	35-93-II 3-May-22	35-93-II 25-Oct-22	35-93-II 3-May-23	35-93-II 18-Oct-23	35-93-II 6-May-24	35-93-II 16-Oct-24	36-93 26-May-15	36-93 14-Oct-15	36-93 24-May-17	36-93 16-Oct-17	36-93 8-May-18	36-93 11-Oct-18	36-93 10-May-19	36-93 8-Oct-19	36-93 5-May-20
1,1,1,2-Tetrachloroethane	µg/L	N/A																	< 0.5
1,1,1-Trichloroethane	µg/L	N/A																	< 0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A																	< 1.0
1,1,2-Trichloroethane	µg/L	N/A																	< 0.5
1,1-Dichloroethane	µg/L	N/A																	< 1.1
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	**0.6**	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1									

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	36-93 13-Oct-20	36-93 3-May-21	36-93 14-Oct-21	36-93 3-May-22	36-93 25-Oct-22	36-93 3-May-23	36-93 18-Oct-23	36-93 6-May-24	36-93 16-Oct-24	37-93-I 26-May-15	37-93-I 14-Oct-15	37-93-I 11-May-16	37-93-I 24-May-17	37-93-I 16-Oct-17	37-93-I 8-May-18	37-93-I 10-Oct-18	37-93-I 10-May-19
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5																
1,1,1-Trichloroethane	µg/L	N/A	< 0.5																
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 1.0																
1,1,2-Trichloroethane	µg/L	N/A	< 0.5																
1,1-Dichloroethane	µg/L	N/A	< 1.1																
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.6**	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 1.0	< 0.4		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300		< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1								

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	37-93-I 7-Oct-19	37-93-I 5-May-20	37-93-I 13-Oct-20	37-93-I 3-May-21	37-93-I 14-Oct-21	37-93-I 3-May-22	37-93-I 25-Oct-22	37-93-I 3-May-23	37-93-I 18-Oct-23	37-93-I 6-May-24	37-93-I 16-Oct-24	37-93-II 26-May-15	37-93-II 14-Oct-15	37-93-II 24-May-17	37-93-II 16-Oct-17	37-93-II 10-Oct-18	37-93-II 10-May-19
1,1,1,2-Tetrachloroethane	µg/L	N/A		< 0.5	< 0.5														
1,1,1-Trichloroethane	µg/L	N/A		< 0.5	< 0.5														
1,1,2,2 Tetrachloroethane	µg/L	N/A		< 1.0	< 1.0														
1,1,2-Trichloroethane	µg/L	N/A		< 0.5	< 0.5														
1,1-Dichloroethane	µg/L	N/A		< 1.1	< 1.1														
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 1.0	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**1.1**	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300				< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1						

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	37-93-II 7-Oct-19	37-93-II 5-May-20	37-93-II 13-Oct-20	37-93-II 3-May-21	37-93-II 14-Oct-21	37-93-II 3-May-22	37-93-II 25-Oct-22	37-93-II 3-May-23	37-93-II 18-Oct-23	37-93-II 6-May-24	37-93-II (Dup) 6-May-24	37-93-II 16-Oct-24	38-93 26-May-15	38-93 14-Oct-15	38-93 24-May-17	38-93 16-Oct-17	38-93 10-Oct-18
1,1,1,2-Tetrachloroethane	µg/L	N/A		< 0.5	< 0.5														
1,1,1-Trichloroethane	µg/L	N/A		< 0.5	< 0.5														
1,1,2,2 Tetrachloroethane	µg/L	N/A		< 1.0	< 1.0														
1,1,2-Trichloroethane	µg/L	N/A		< 0.5	< 0.5														
1,1-Dichloroethane	µg/L	N/A		< 1.1	< 1.1														
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**1.7**	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 1.0
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300				< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	<1.1					

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	38-93 10-May-19	38-93 7-Oct-19	38-93 5-May-20	38-93 13-Oct-20	38-93 3-May-21	38-93 14-Oct-21	38-93 3-May-22	38-93 25-Oct-22	38-93 3-May-23	38-93 18-Oct-23	38-93 6-May-24	38-93 16-Oct-24	39-93-I 26-May-15	39-93-I 14-Oct-15	39-93-I 24-May-17	39-93-I 16-Oct-17	39-93-I 16-Oct-17
1,1,1,2-Tetrachloroethane	µg/L	N/A			< 0.5	< 0.5													
1,1,1-Trichloroethane	µg/L	N/A			< 0.5	< 0.5													
1,1,2,2 Tetrachloroethane	µg/L	N/A			< 1.0	< 1.0													
1,1,2-Trichloroethane	µg/L	N/A			< 0.5	< 0.5													
1,1-Dichloroethane	µg/L	N/A			< 1.1	< 1.1													
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 1.0
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300					< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1					

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	39-93-I 10-Oct-18	39-93-I 10-May-19	39-93-I 7-Oct-19	39-93-I 5-May-20	39-93-I 13-Oct-20	39-93-I 14-Oct-21	39-93-I 3-May-22	39-93-I 25-Oct-22	39-93-I 3-May-23	39-93-I 18-Oct-23	39-93-I 6-May-24	39-93-I 16-Oct-24	39-93-II 26-May-15	39-93-II 14-Oct-15	39-93-II 24-May-17	39-93-II 16-Oct-17	39-93-II 10-Oct-18
1,1,1,2-Tetrachloroethane	µg/L	N/A				< 0.5	< 0.5												
1,1,1-Trichloroethane	µg/L	N/A				< 0.5	< 0.5												
1,1,2,2 Tetrachloroethane	µg/L	N/A				< 1.0	< 1.0												
1,1,2-Trichloroethane	µg/L	N/A				< 0.5	< 0.5												
1,1-Dichloroethane	µg/L	N/A				< 1.1	< 1.1												
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 1.0
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300						< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1					

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	39-93-II 10-May-19	39-93-II 5-May-20	39-93-II 13-Oct-20	39-93-II 3-May-21	39-93-II 14-Oct-21	39-93-II 3-May-22	39-93-II 25-Oct-22	39-93-II 3-May-23	39-93-II 18-Oct-23	39-93-II 6-May-24	39-93-II 16-Oct-24	43-93-I 27-May-15	43-93-I 13-Oct-15	43-93-I 24-May-17	43-93-I 17-Oct-17	43-93-I 8-May-18	43-93-I 11-Oct-18
1,1,1,2-Tetrachloroethane	µg/L	N/A		< 0.5	< 0.5														
1,1,1-Trichloroethane	µg/L	N/A		< 0.5	< 0.5														
1,1,2,2 Tetrachloroethane	µg/L	N/A		< 1.0	< 1.0														
1,1,2-Trichloroethane	µg/L	N/A		< 0.5	< 0.5														
1,1-Dichloroethane	µg/L	N/A		< 1.1	< 1.1														
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A															< 1.0		
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 1.0	< 0.4	< 1.0	< 0.5	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 1.1	< 1.0	< 1.0
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300				< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1						

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	43-93-I 8-May-19	43-93-I 9-Oct-19	43-93-I 5-May-20	43-93-I 13-Jul-20	43-93-I 13-Oct-20	43-93-I 3-May-21	43-93-I 5-Jul-21	43-93-I 14-Oct-21	43-93-I 3-May-22	43-93-I 28-Jul-22	43-93-I 12-Jul-23	43-93-I 18-Oct-23	43-93-I 6-May-24	43-93-I (Dup) 6-May-24	43-93-I 29-Jul-24	43-93-I 16-Oct-24	43-93-II 27-May-15
1,1,1,2-Tetrachloroethane	µg/L	N/A			< 0.5	< 0.5	< 0.5		< 0.5			< 0.5	< 0.5				<0.5		
1,1,1-Trichloroethane	µg/L	N/A			< 0.5	< 0.5	< 0.5		< 0.5			< 0.5	< 0.5				<0.5		
1,1,2,2 Tetrachloroethane	µg/L	N/A			< 1.0	< 0.5	< 1.0		< 0.5			< 0.5	< 0.5				<0.5		
1,1,2-Trichloroethane	µg/L	N/A			< 0.5	< 0.5	< 0.5		< 0.5			< 0.5	< 0.5				<0.5		
1,1-Dichloroethane	µg/L	N/A			< 1.1	< 0.5	< 1.1		< 0.5			< 0.5	< 0.5				<0.5		
1,1-Dichloroethylene	µg/L	14				< 0.5			< 0.5			< 0.5	< 0.5				<0.5		
Ethylene Dibromide	µg/L	N/A				< 0.2			< 0.2			< 0.2	< 0.2				<0.2		
1,2-Dichlorobenzene	µg/L	3				< 0.5			< 0.5			< 0.5	< 0.5				<0.5		
1,2-Dichloroethane	µg/L	5				< 0.5			< 0.5			< 0.5	< 0.5				<0.5		
1,2-Dichloropropane	µg/L	N/A				< 0.5			< 0.5			< 0.5	< 0.5				<0.5		
1,3-Dichlorobenzene	µg/L	N/A				< 0.5			< 0.5			< 0.5	< 0.5				<0.5		
1,4-Dichlorobenzene	µg/L	1				< 0.5			< 0.5			< 0.5	< 0.5				<0.5		
Methyl Ethyl Ketone	µg/L	N/A				< 20			< 20			< 20	< 20				<2		
Methyl Isobutyl Ketone	µg/L	N/A				< 20			< 20			< 20	< 20				<20		
Acetone	µg/L	N/A				< 30			< 30			< 30	< 30				<30		
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Bromodichloromethane	µg/L	N/A				< 2			< 2			< 2	< 2				<2		
Bromoform	µg/L	N/A				< 5			< 5			< 5	< 5				<5		
Bromomethane	µg/L	N/A				< 0.5			< 0.5			< 0.5	< 0.5				<0.5		
Carbon Tetrachloride	µg/L	5				< 0.2			< 0.2			< 0.2	< 0.2				<0.2		
Chlorobenzene	µg/L	80				< 0.5			< 0.5			< 0.5	< 0.5				<0.5		
Chloroform	µg/L	N/A				< 1			< 1			< 1	< 1				<1		
cis 1,2-Dichloroethene	µg/L	N/A				< 0.5			< 0.5			< 0.5	< 0.5				<0.5		
cis 1,3-Dichloroethene	µg/L	N/A				< 0.5			< 0.5			< 0.5	< 0.5				<0.5		
Dibromochloromethane	µg/L	N/A				< 2			< 2			< 2	< 2				<2		
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	<1	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A				< 2			< 2			< 2	< 2				<2		
Methylene Chloride	µg/L	N/A				< 5			< 5			< 5	< 5				<5		
Vinyl Chloride	µg/L	2							< 0.2			< 0.2	< 0.2				<0.2		
Trichloroethylene	µg/L	5							< 0.5			< 0.5	< 0.5				<0.5		
Xylene, m,p,o-	µg/L	300						< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	**0**	<1.1	

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	43-93-II 13-Oct-15	43-93-II 24-May-17	43-93-II 17-Oct-17	43-93-II 8-May-18	43-93-II 11-Oct-18	43-93-II 8-May-19	43-93-II 9-Oct-19	43-93-II 5-May-20	43-93-II 13-Jul-20	43-93-II 13-Oct-20	43-93-II 3-May-21	43-93-II 5-Jul-21	43-93-II 14-Oct-21	43-93-II 3-May-22	43-93-II 28-Jul-22	43-93-II 25-Oct-22	43-93-II 25-Oct-22
1,1,1,2-Tetrachloroethane	µg/L	N/A								< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		
1,1,1-Trichloroethane	µg/L	N/A								< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		
1,1,2,2 Tetrachloroethane	µg/L	N/A								< 1.0	< 0.5	< 1.0		< 0.5			< 0.5		
1,1,2-Trichloroethane	µg/L	N/A								< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		
1,1-Dichloroethane	µg/L	N/A								< 1.1	< 0.5	< 1.1		< 0.5			< 0.5		
1,1-Dichloroethylene	µg/L	14									< 0.5			< 0.5			< 0.5		
Ethylene Dibromide	µg/L	N/A									< 0.2			< 0.2			< 0.2		
1,2-Dichlorobenzene	µg/L	3									< 0.5			< 0.5			< 0.5		
1,2-Dichloroethane	µg/L	5									< 0.5			< 0.5			< 0.5		
1,2-Dichloropropane	µg/L	N/A									< 0.5			< 0.5			< 0.5		
1,3-Dichlorobenzene	µg/L	N/A									< 0.5			< 0.5			< 0.5		
1,4-Dichlorobenzene	µg/L	1									< 0.5			< 0.5			< 0.5		
Methyl Ethyl Ketone	µg/L	N/A									< 20			< 20			< 20		
Methyl Isobutyl Ketone	µg/L	N/A			< 1.0						< 20			< 20			< 20		
Acetone	µg/L	N/A									< 30			< 30			< 30		
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A									< 2			< 2			< 2		
Bromoform	µg/L	N/A									< 5			< 5			< 5		
Bromomethane	µg/L	N/A									< 0.5			< 0.5			< 0.5		
Carbon Tetrachloride	µg/L	5									< 0.2			< 0.2			< 0.2		
Chlorobenzene	µg/L	80									< 0.5			< 0.5			< 0.5		
Chloroform	µg/L	N/A									< 1			< 1			< 1		
cis 1,2-Dichloroethene	µg/L	N/A									< 0.5			< 0.5			< 0.5		
cis 1,3-Dichloroethene	µg/L	N/A									< 0.5			< 0.5			< 0.5		
Dibromochloromethane	µg/L	N/A									< 2			< 2			< 2		
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 0.4	< 1.0	< 0.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.1	< 0.5	< 1.1	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.5**
Methyl tert-Butyl Ether	µg/L	N/A									< 2			< 2			< 2		
Methylene Chloride	µg/L	N/A	<5								< 5			< 5			< 5		
Vinyl Chloride	µg/L	2												< 0.2			< 0.2		
Trichloroethylene	µg/L	5												< 0.5			< 0.5		
Xylene, m,p,o-	µg/L	300											< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	43-93-II 12-Jul-23	43-93-II 18-Oct-23	43-93-II 6-May-24	43-93-II 29-Jul-24	43-93-II 16-Oct-24	44-93-I 27-May-15	44-93-I 14-Jul-15	44-93-I 20-Oct-15	44-93-I 13-Jul-16	44-93-I 24-May-17	44-93-I 19-Jul-17	44-93-I 17-Oct-17	44-93-I 8-May-18	44-93-I 24-Jul-18	44-93-I 11-Oct-18	44-93-I 8-May-19	44-93-I 15-Jul-19
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,1,1-Trichloroethane	µg/L	N/A	< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.4			< 0.5
1,1,2-Trichloroethane	µg/L	N/A	< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,1-Dichloroethane	µg/L	N/A	< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,1-Dichloroethylene	µg/L	14	< 0.5			<0.5							< 0.5			< 0.1			< 0.5
Ethylene Dibromide	µg/L	N/A	< 0.2			<0.2			< 0.2		< 0.5		< 0.2			< 0.1			< 0.2
1,2-Dichlorobenzene	µg/L	3	< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,2-Dichloroethane	µg/L	5	< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,2-Dichloropropane	µg/L	N/A	< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,3-Dichlorobenzene	µg/L	N/A	< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,4-Dichlorobenzene	µg/L	1	< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.2			< 0.5
Methyl Ethyl Ketone	µg/L	N/A	< 20			<2					< 20		< 20			< 1			< 20
Methyl Isobutyl Ketone	µg/L	N/A	< 20			<20					< 20		< 20	< 1.0		< 1			< 20
Acetone	µg/L	N/A	< 30			<30			< 30		< 30		< 30			< 2			< 30
Benzene	µg/L	5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A	< 2			<2			< 2		< 2		< 2			< 0.1			< 2
Bromoform	µg/L	N/A	< 5			<5			< 5		< 5		< 5			< 0.1			< 5
Bromomethane	µg/L	N/A	< 0.5			<0.5					< 0.5		< 0.5			< 0.3			< 0.5
Carbon Tetrachloride	µg/L	5	< 0.2			<0.2			< 0.2		< 0.2		< 0.2			< 0.2			< 0.2
Chlorobenzene	µg/L	80	< 0.5			<0.5			< 0.5		< 0.5					< 0.2			< 0.5
Chloroform	µg/L	N/A	< 1			<1			< 1		< 1		< 1			< 0.3			< 1
cis 1,2-Dichloroethene	µg/L	N/A	< 0.5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
cis 1,3-Dichloroethene	µg/L	N/A	< 0.5			<0.5			< 0.5				< 0.5			< 0.1			< 0.5
Dibromochloromethane	µg/L	N/A	< 2			<2			< 2		< 0.5		< 2			< 0.1			< 2
Dichlorodifluoromethane	µg/L	N/A									< 2								< 5
Ethylbenzene	µg/L	2.4	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	<1	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.5	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.1	< 1.0	< 0.4	< 1.0	< 0.5	< 0.5
Toluene	µg/L	N/A	**0.8**	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A	< 2			<2		< 2		< 2			< 2			< 1			< 2
Methylene Chloride	µg/L	N/A	< 5			<5		< 5			<5					< 0.3			
Vinyl Chloride	µg/L	2	< 0.2			<0.2													
Trichloroethylene	µg/L	5	< 0.5			<0.5													
Xylene, m,p,o-	µg/L	300	< 1.1	<1.1	<1.1	<1.1	<1.1												

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	44-93-I 5-May-20	44-93-I 13-Jul-20	44-93-I 13-Oct-20	44-93-I 3-May-21	44-93-I 5-Jul-21	44-93-I 14-Oct-21	44-93-I 3-May-22	44-93-I 28-Jul-22	44-93-I 25-Oct-22	44-93-I 12-Jul-23	44-93-I 18-Oct-23	44-93-I 6-May-24	44-93-I 16-Oct-24	44-93-II 27-May-15	44-93-II 20-Oct-15	44-93-II 13-Jul-16	44-93-II 24-May-17
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5						< 0.5	
1,1,1-Trichloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5						< 0.5	
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 1.0	< 0.5	< 1.0		< 0.5			< 0.5		< 0.5						< 0.5	
1,1,2-Trichloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5						< 0.5	
1,1-Dichloroethane	µg/L	N/A	< 1.1	< 0.5	< 1.1		< 0.5			< 0.5		< 0.5						< 0.5	
1,1-Dichloroethylene	µg/L	14		< 0.5			< 0.5			< 0.5		< 0.5							
Ethylene Dibromide	µg/L	N/A		< 0.2			< 0.2			< 0.2		< 0.2						< 0.5	
1,2-Dichlorobenzene	µg/L	3		< 0.5			< 0.5			< 0.5		< 0.5						< 0.5	
1,2-Dichloroethane	µg/L	5		< 0.5			< 0.5			< 0.5		< 0.5						< 0.5	
1,2-Dichloropropane	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5						< 0.5	
1,3-Dichlorobenzene	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5						< 0.5	
1,4-Dichlorobenzene	µg/L	1		< 0.5			< 0.5			< 0.5		< 0.5						< 0.5	
Methyl Ethyl Ketone	µg/L	N/A		< 20			< 20			< 20		< 20						< 20	
Methyl Isobutyl Ketone	µg/L	N/A		< 20			< 20			< 20		< 20						< 20	
Acetone	µg/L	N/A		< 30			< 30			< 30		< 30						< 30	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A		< 2			< 2			< 2		< 2						< 2	
Bromoform	µg/L	N/A		< 5			< 5			< 5		< 5						< 5	
Bromomethane	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5						< 0.5	
Carbon Tetrachloride	µg/L	5		< 0.2			< 0.2			< 0.2		< 0.2						< 0.2	
Chlorobenzene	µg/L	80		< 0.5			< 0.5			< 0.5		< 0.5						< 0.5	
Chloroform	µg/L	N/A		< 1			< 1			< 1		< 1						< 1	
cis 1,2-Dichloroethene	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5						< 0.5	
cis 1,3-Dichloroethene	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5							
Dibromochloromethane	µg/L	N/A		< 2			< 2			< 2		< 2						< 0.5	
Dichlorodifluoromethane	µg/L	N/A																< 2	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5		< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5		< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	**0.8**		< 0.5
Methyl tert-Butyl Ether	µg/L	N/A		< 2			< 2			< 2		< 2					< 2		
Methylene Chloride	µg/L	N/A		< 5			< 5			< 5		< 5						<5	
Vinyl Chloride	µg/L	2					< 0.2			< 0.2		< 0.2							
Trichloroethylene	µg/L	5					< 0.5			< 0.5		< 0.5							
Xylene, m,p,o-	µg/L	300				< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1				

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	44-93-II 19-Jul-17	44-93-II 17-Oct-17	44-93-II 8-May-18	44-93-II 11-Oct-18	44-93-II 8-May-19	44-93-II 15-Jul-19	44-93-II 9-Oct-19	44-93-II 5-May-20	44-93-II 13-Jul-20	44-93-II 13-Oct-20	44-93-II 3-May-21	44-93-II 5-Jul-21	44-93-II 14-Oct-21	44-93-II 3-May-22	44-93-II 28-Jul-22	44-93-II 25-Oct-22	44-93-II 12-Jul-23
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5					< 0.5		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5
1,1,1-Trichloroethane	µg/L	N/A	< 0.5					< 0.5		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 0.5					< 0.5		< 1.0	< 0.5	< 1.0		< 0.5			< 0.5		< 0.5
1,1,2-Trichloroethane	µg/L	N/A	< 0.5					< 0.5		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5
1,1-Dichloroethane	µg/L	N/A	< 0.5					< 0.5		< 1.1	< 0.5	< 1.1		< 0.5			< 0.5		< 0.5
1,1-Dichloroethylene	µg/L	14	< 0.5					< 0.5			< 0.5			< 0.5			< 0.5		< 0.5
Ethylene Dibromide	µg/L	N/A	< 0.2					< 0.2			< 0.2			< 0.2			< 0.2		< 0.2
1,2-Dichlorobenzene	µg/L	3	< 0.5					< 0.5			< 0.5			< 0.5			< 0.5		< 0.5
1,2-Dichloroethane	µg/L	5	< 0.5					< 0.5			< 0.5			< 0.5			< 0.5		< 0.5
1,2-Dichloropropane	µg/L	N/A	< 0.5					< 0.5			< 0.5			< 0.5			< 0.5		< 0.5
1,3-Dichlorobenzene	µg/L	N/A	< 0.5					< 0.5			< 0.5			< 0.5			< 0.5		< 0.5
1,4-Dichlorobenzene	µg/L	1	< 0.5					< 0.5			< 0.5			< 0.5			< 0.5		< 0.5
Methyl Ethyl Ketone	µg/L	N/A	< 20					< 20			< 20			< 20			< 20		< 20
Methyl Isobutyl Ketone	µg/L	N/A	< 20	< 1.0				< 20			< 20			< 20			< 20		< 20
Acetone	µg/L	N/A	< 30					< 30			< 30			< 30			< 30		< 30
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A	< 2					< 2			< 2			< 2			< 2		< 2
Bromoform	µg/L	N/A	< 5					< 5			< 5			< 5			< 5		< 5
Bromomethane	µg/L	N/A	< 0.5					< 0.5			< 0.5			< 0.5			< 0.5		< 0.5
Carbon Tetrachloride	µg/L	5	< 0.2					< 0.2			< 0.2			< 0.2			< 0.2		< 0.2
Chlorobenzene	µg/L	80						< 0.5			< 0.5			< 0.5			< 0.5		< 0.5
Chloroform	µg/L	N/A	< 1					< 1			< 1			< 1			< 1		< 1
cis 1,2-Dichloroethene	µg/L	N/A	< 0.5					< 0.5			< 0.5			< 0.5			< 0.5		< 0.5
cis 1,3-Dichloroethene	µg/L	N/A	< 0.5					< 0.5			< 0.5			< 0.5			< 0.5		< 0.5
Dibromochloromethane	µg/L	N/A	< 2					< 2			< 2			< 2			< 2		< 2
Dichlorodifluoromethane	µg/L	N/A						< 5											
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 0.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 1.1	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A	< 2					< 2			< 2			< 2			< 2		< 2
Methylene Chloride	µg/L	N/A									< 5			< 5			< 5		< 5
Vinyl Chloride	µg/L	2												< 0.2			< 0.2		< 0.2
Trichloroethylene	µg/L	5												< 0.5			< 0.5		< 0.5
Xylene, m,p,o-	µg/L	300											< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	44-93-II 18-Oct-23	44-93-II 6-May-24	44-93-II 29-Jul-24	44-93-II 16-Oct-24	45-93 27-May-15	45-93 14-Jul-15	45-93 20-Oct-15	45-93 13-Jul-16	45-93 24-May-17	45-93 20-Jul-17	45-93 17-Oct-17	45-93 8-May-18	45-93 24-Jul-18	45-93 11-Oct-18	45-93 8-May-19	45-93 15-Jul-19	45-93 9-Oct-19
1,1,1,2-Tetrachloroethane	µg/L	N/A			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5	
1,1,1-Trichloroethane	µg/L	N/A			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5	
1,1,2,2 Tetrachloroethane	µg/L	N/A			<0.5			< 0.5		< 0.5		< 0.5			< 0.4			< 0.5	
1,1,2-Trichloroethane	µg/L	N/A			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5	
1,1-Dichloroethane	µg/L	N/A			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5	
1,1-Dichloroethylene	µg/L	14			<0.5							< 0.5			< 0.1			< 0.5	
Ethylene Dibromide	µg/L	N/A			<0.2			< 0.2		< 0.5		< 0.2			< 0.1			< 0.2	
1,2-Dichlorobenzene	µg/L	3			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5	
1,2-Dichloroethane	µg/L	5			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5	
1,2-Dichloropropane	µg/L	N/A			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5	
1,3-Dichlorobenzene	µg/L	N/A			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5	
1,4-Dichlorobenzene	µg/L	1			<0.5			< 0.5		< 0.5		< 0.5			< 0.2			< 0.5	
Methyl Ethyl Ketone	µg/L	N/A			<2					< 20		< 20			< 1			< 20	
Methyl Isobutyl Ketone	µg/L	N/A			<20					< 20		< 20			< 1			< 20	
Acetone	µg/L	N/A			<30			< 30		< 30		< 30			< 2			< 30	
Benzene	µg/L	5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A			<2			< 2		< 2		< 2			< 0.1			< 2	
Bromoform	µg/L	N/A			<5			< 5		< 5		< 5			< 0.1			< 5	
Bromomethane	µg/L	N/A			<0.5					< 0.5		< 0.5			< 0.3			< 0.5	
Carbon Tetrachloride	µg/L	5			<0.2			< 0.2		< 0.2		< 0.2			< 0.2			< 0.2	
Chlorobenzene	µg/L	80			<0.5			< 0.5		< 0.5					< 0.2			< 0.5	
Chloroform	µg/L	N/A			<1			< 1		< 1		< 1			< 0.3			< 1	
cis 1,2-Dichloroethene	µg/L	N/A			<0.5			< 0.5		< 0.5		< 0.5			< 0.1			< 0.5	
cis 1,3-Dichloroethene	µg/L	N/A			<0.5			< 0.5				< 0.5			< 0.1			< 0.5	
Dibromochloromethane	µg/L	N/A			<2			< 2		< 0.5		< 2			< 0.1			< 2	
Dichlorodifluoromethane	µg/L	N/A								< 2								< 5	
Ethylbenzene	µg/L	2.4	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	<1	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.4	< 1.0	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A			<2		< 2		< 2			< 2			< 1			< 2	
Methylene Chloride	µg/L	N/A			<5		< 5								< 0.3				
Vinyl Chloride	µg/L	2			<0.2														
Trichloroethylene	µg/L	5			<0.5														
Xylene, m,p,o-	µg/L	300	<1.1	<1.1	<1.1	<1.1													

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	45-93 5-May-20	45-93 13-Jul-20	45-93 13-Oct-20	45-93 3-May-21	45-93 5-Jul-21	45-93 14-Oct-21	45-93 3-May-22	45-93 28-Jul-22	45-93 25-Oct-22	45-93 12-Jul-23	45-93 18-Oct-23	45-93 6-May-24	45-93 29-Jul-24	45-93 16-Oct-24	45-93 (Dup) 16-Oct-24	45-93-II 26-May-15	45-93-II 20-Oct-15
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5			<0.5				
1,1,1-Trichloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5			<0.5				
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 1.0	< 0.5	< 1.0		< 0.5			< 0.5		< 0.5			<0.5				
1,1,2-Trichloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5			<0.5				
1,1-Dichloroethane	µg/L	N/A	< 1.1	< 0.5	< 1.1		< 0.5			< 0.5		< 0.5			<0.5				
1,1-Dichloroethylene	µg/L	14		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
Ethylene Dibromide	µg/L	N/A		< 0.2			< 0.2			< 0.2		< 0.2			<0.2				
1,2-Dichlorobenzene	µg/L	3		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
1,2-Dichloroethane	µg/L	5		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
1,2-Dichloropropane	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
1,3-Dichlorobenzene	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
1,4-Dichlorobenzene	µg/L	1		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
Methyl Ethyl Ketone	µg/L	N/A		< 20			< 20			< 20		< 20			<2				
Methyl Isobutyl Ketone	µg/L	N/A		< 20			< 20			< 20		< 20			<20				
Acetone	µg/L	N/A		< 30			< 30			< 30		< 30			<30				
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	< 0.5
Bromodichloromethane	µg/L	N/A		< 2			< 2			< 2		< 2			<2				
Bromoform	µg/L	N/A		< 5			< 5			< 5		< 5			<5				
Bromomethane	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
Carbon Tetrachloride	µg/L	5		< 0.2			< 0.2			< 0.2		< 0.2			<0.2				
Chlorobenzene	µg/L	80		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
Chloroform	µg/L	N/A		< 1			< 1			< 1		< 1			<1				
cis 1,2-Dichloroethene	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
cis 1,3-Dichloroethene	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
Dibromochloromethane	µg/L	N/A		< 2			< 2			< 2		< 2			<2				
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	<1	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A		< 2			< 2			< 2		< 2			<2				
Methylene Chloride	µg/L	N/A		< 5			< 5			< 5		< 5			<5				
Vinyl Chloride	µg/L	2					< 0.2			< 0.2		< 0.2			<0.2				
Trichloroethylene	µg/L	5					< 0.5			< 0.5		< 0.5			<0.5				
Xylene, m,p,o-	µg/L	300				< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	<1.1	<1.1		

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	45-93-II 24-May-17	45-93-II 18-Oct-17	45-93-II 8-May-18	45-93-II 11-Oct-18	45-95-I 26-May-15	45-95-I 20-Oct-15	45-95-I 24-May-17	45-95-I 18-Oct-17	45-95-I 8-May-18	45-95-I 24-Jul-18	45-95-I 11-Oct-18	45-95-I 9-May-19	45-95-I 8-Oct-19	45-95-I 5-May-20	45-95-I 13-Oct-20	45-95-I 3-May-21	45-95-I 14-Oct-21
1,1,1,2-Tetrachloroethane	µg/L	N/A										< 0.1				< 0.5	< 0.5		
1,1,1-Trichloroethane	µg/L	N/A										< 0.1				< 0.5	< 0.5		
1,1,2,2 Tetrachloroethane	µg/L	N/A										< 0.4				< 1.0	< 1.0		
1,1,2-Trichloroethane	µg/L	N/A										< 0.1				< 0.5	< 0.5		
1,1-Dichloroethane	µg/L	N/A										< 0.1				< 1.1	< 1.1		
1,1-Dichloroethylene	µg/L	14										< 0.1							
Ethylene Dibromide	µg/L	N/A										< 0.1							
1,2-Dichlorobenzene	µg/L	3										< 0.1							
1,2-Dichloroethane	µg/L	5										< 0.1							
1,2-Dichloropropane	µg/L	N/A										< 0.1							
1,3-Dichlorobenzene	µg/L	N/A										< 0.1							
1,4-Dichlorobenzene	µg/L	1										< 0.2							
Methyl Ethyl Ketone	µg/L	N/A										< 1							
Methyl Isobutyl Ketone	µg/L	N/A										< 1							
Acetone	µg/L	N/A										< 2							
Benzene	µg/L	5	< 0.5	< 0.5	**1.9**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A										< 0.1							
Bromoform	µg/L	N/A										< 0.1							
Bromomethane	µg/L	N/A										< 0.3							
Carbon Tetrachloride	µg/L	5										< 0.2							
Chlorobenzene	µg/L	80										< 0.2							
Chloroform	µg/L	N/A										< 0.3							
cis 1,2-Dichloroethene	µg/L	N/A										< 0.1							
cis 1,3-Dichloroethene	µg/L	N/A										< 0.1							
Dibromochloromethane	µg/L	N/A										< 0.1							
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0		< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A										< 1							
Methylene Chloride	µg/L	N/A										< 0.3							
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300																< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	45-95-I 3-May-22	45-95-I 25-Oct-22	45-95-I 3-May-23	45-95-I 18-Oct-23	45-95-I 6-May-24	45-95-I 16-Oct-24	45-95-II 9-May-19	45-95-II 8-Oct-19	45-95-II 5-May-20	45-95-II 13-Oct-20	45-95-II 3-May-21	45-95-II 14-Oct-21	45-95-II 3-May-22	45-95-II 25-Oct-22	45-95-II 3-May-23	45-95-II 18-Oct-23	45-95-II 6-May-24
1,1,1,2-Tetrachloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1,1-Trichloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1,2,2 Tetrachloroethane	µg/L	N/A									< 1.0	< 1.0							
1,1,2-Trichloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1-Dichloroethane	µg/L	N/A									< 1.1	< 1.1							
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1					< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	45-95-II 16-Oct-24	46-95-I 26-May-15	46-95-I 20-Oct-15	46-95-I 24-May-17	46-95-I 18-Oct-17	46-95-I 8-May-18	46-95-I 11-Oct-18	46-95-I 9-May-19	46-95-I 8-Oct-19	46-95-I 5-May-20	46-95-I 13-Oct-20	46-95-I 3-May-21	46-95-I 14-Oct-21	46-95-I 3-May-22	46-95-I 25-Oct-22	46-95-I 3-May-23	46-95-I 18-Oct-23
1,1,1,2-Tetrachloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1,1-Trichloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1,2,2 Tetrachloroethane	µg/L	N/A										< 1.0	< 1.0						
1,1,2-Trichloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1-Dichloroethane	µg/L	N/A										< 1.1	< 1.1						
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	**0.6**	< 0.5	< 0.5	**0.6**	**0.8**	< 0.5	**0.8**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
m & p-Xylene	µg/L	N/A	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1
o-Xylene	µg/L	N/A	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Toluene	µg/L	N/A	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1											< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	46-95-I 6-May-24	46-95-I 16-Oct-24	46-95-II 26-May-15	46-95-II 20-Oct-15	46-95-II 24-May-17	46-95-II 18-Oct-17	46-95-II 8-May-18	46-95-II 11-Oct-18	46-95-II 9-May-19	46-95-II 8-Oct-19	46-95-II 5-May-20	46-95-II 13-Oct-20	46-95-II 3-May-21	46-95-II 14-Oct-21	46-95-II 3-May-22	46-95-II 25-Oct-22	46-95-II 3-May-23
1,1,1,2-Tetrachloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1,1-Trichloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1,2,2 Tetrachloroethane	µg/L	N/A											< 1.0	< 1.0					
1,1,2-Trichloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1-Dichloroethane	µg/L	N/A											< 1.1	< 1.1					
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	<0.5	< 0.5	< 0.5	**1**	**0.6**	**0.9**	< 0.5	**0.9**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1	<1.1											< 1.1	< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	46-95-II 18-Oct-23	46-95-II 6-May-24	46-95-II 16-Oct-24	47-96-I 26-May-15	47-96-I 20-Oct-15	47-96-I 8-May-18	47-96-I 11-Oct-18	47-96-I 9-May-19	47-96-I 8-Oct-19	47-96-I 5-May-20	47-96-I 13-Oct-20	47-96-I 3-May-21	47-96-I 14-Oct-21	47-96-I 3-May-22	47-96-I 25-Oct-22	47-96-I 3-May-23	47-96-I 18-Oct-23
1,1,1,2-Tetrachloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1,1-Trichloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1,2,2 Tetrachloroethane	µg/L	N/A										< 1.0	< 1.0						
1,1,2-Trichloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1-Dichloroethane	µg/L	N/A										< 1.1	< 1.1						
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
m & p-Xylene	µg/L	N/A	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1
o-Xylene	µg/L	N/A	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Toluene	µg/L	N/A	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1	<1.1	<1.1									< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	47-96-I 6-May-24	47-96-I 16-Oct-24	47-96-II 26-May-15	47-96-II 20-Oct-15	47-96-II 24-May-17	47-96-II 18-Oct-17	47-96-II 8-May-18	47-96-II 11-Oct-18	47-96-II 9-May-19	47-96-II 8-Oct-19	47-96-II 5-May-20	47-96-II 13-Oct-20	47-96-II 3-May-21	47-96-II 14-Oct-21	47-96-II 3-May-22	47-96-II 25-Oct-22	47-96-II 3-May-23
1,1,1,2-Tetrachloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1,1-Trichloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1,2,2 Tetrachloroethane	µg/L	N/A											< 1.0	< 1.0					
1,1,2-Trichloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1-Dichloroethane	µg/L	N/A											< 1.1	< 1.1					
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.8**
m & p-Xylene	µg/L	N/A	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.9**
Toluene	µg/L	N/A	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**1.3**	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1	<1.1											< 1.1	< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	47-96-II 18-Oct-23	47-96-II 6-May-24	47-96-II 16-Oct-24	48-96-I 26-May-15	48-96-I 20-Oct-15	48-96-I 23-May-17	48-96-I 18-Oct-17	48-96-I 8-May-18	48-96-I 11-Oct-18	48-96-I 8-Oct-19	48-96-I 5-May-20	48-96-I 13-Oct-20	48-96-I 3-May-21	48-96-I 14-Oct-21	48-96-I 3-May-22	48-96-I 25-Oct-22	48-96-I 3-May-23
1,1,1,2-Tetrachloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1,1-Trichloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1,2,2 Tetrachloroethane	µg/L	N/A											< 1.0	< 1.0					
1,1,2-Trichloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1-Dichloroethane	µg/L	N/A											< 1.1	< 1.1					
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.5**
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1	<1.1	<1.1										< 1.1	< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	48-96-I 18-Oct-23	48-96-I 6-May-24	48-96-I 16-Oct-24	48-96-II 26-May-15	48-96-II 20-Oct-15	48-96-II 23-May-17	48-96-II 18-Oct-17	48-96-II 8-May-18	48-96-II 9-May-19	48-96-II 5-May-20	48-96-II 13-Oct-20	48-96-II 3-May-21	48-96-II 14-Oct-21	48-96-II 3-May-22	48-96-II 25-Oct-22	48-96-II 3-May-23	48-96-II 18-Oct-23
1,1,1,2-Tetrachloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1,1-Trichloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1,2,2 Tetrachloroethane	µg/L	N/A										< 1.0	< 1.0						
1,1,2-Trichloroethane	µg/L	N/A										< 0.5	< 0.5						
1,1-Dichloroethane	µg/L	N/A										< 1.1	< 1.1						
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
m & p-Xylene	µg/L	N/A	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1
o-Xylene	µg/L	N/A	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Toluene	µg/L	N/A	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1	<1.1	<1.1									< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	48-96-II 6-May-24	48-96-II 16-Oct-24	49-96-I 28-May-15	49-96-I 19-Oct-15	49-96-I 24-May-17	49-96-I 17-Oct-17	49-96-I 8-May-18	49-96-I 11-Oct-18	49-96-I 8-May-19	49-96-I 7-Oct-19	49-96-I 5-May-20	49-96-I 13-Oct-20	49-96-I 3-May-21	49-96-I 14-Oct-21	49-96-I 3-May-22	49-96-I 25-Oct-22	49-96-I 3-May-23
1,1,1,2-Tetrachloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1,1-Trichloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1,2,2 Tetrachloroethane	µg/L	N/A											< 1.0	< 1.0					
1,1,2-Trichloroethane	µg/L	N/A											< 0.5	< 0.5					
1,1-Dichloroethane	µg/L	N/A											< 1.1	< 1.1					
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	<1	<1	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	<0.5	<0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1	<1.1											< 1.1	< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	49-96-I 18-Oct-23	49-96-I 6-May-24	49-96-I 16-Oct-24	49-96-II 28-May-15	49-96-II 19-Oct-15	49-96-II 24-May-17	49-96-II 17-Oct-17	49-96-II 8-May-18	49-96-II 11-Oct-18	49-96-II 8-May-19	49-96-II 7-Oct-19	49-96-II 5-May-20	49-96-II 13-Oct-20	49-96-II 3-May-21	49-96-II 14-Oct-21	49-96-II 3-May-22	49-96-II 25-Oct-22
1,1,1,2-Tetrachloroethane	µg/L	N/A												< 0.5	< 0.5				
1,1,1-Trichloroethane	µg/L	N/A												< 0.5	< 0.5				
1,1,2,2 Tetrachloroethane	µg/L	N/A												< 1.0	< 1.0				
1,1,2-Trichloroethane	µg/L	N/A												< 0.5	< 0.5				
1,1-Dichloroethane	µg/L	N/A												< 1.1	< 1.1				
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	<1	<1	<1	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	<0.5	<0.5	<0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1	<1.1	<1.1											< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	49-96-II 3-May-23	49-96-II 18-Oct-23	49-96-II 6-May-24	49-96-II 16-Oct-24	49-96-III 28-May-15	49-96-III 19-Oct-15	49-96-III 24-May-17	49-96-III 17-Oct-17	49-96-III 8-May-18	49-96-III 11-Oct-18	49-96-III 8-May-19	49-96-III 7-Oct-19	49-96-III 5-May-20	49-96-III 13-Oct-20	49-96-III 3-May-21	49-96-III 14-Oct-21	49-96-III 3-May-22
1,1,1,2-Tetrachloroethane	µg/L	N/A													< 0.5	< 0.5			
1,1,1-Trichloroethane	µg/L	N/A													< 0.5	< 0.5			
1,1,2,2 Tetrachloroethane	µg/L	N/A													< 1.0	< 1.0			
1,1,2-Trichloroethane	µg/L	N/A													< 0.5	< 0.5			
1,1-Dichloroethane	µg/L	N/A													< 1.1	< 1.1			
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	<1	<1	<1	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	<0.5	<0.5	<0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A						<5											
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	< 1.1	<1.1	<1.1	<1.1											< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	49-96-III 25-Oct-22	49-96-III 3-May-23	49-96-III 18-Oct-23	49-96-III 6-May-24	49-96-III 16-Oct-24	53-98 29-May-15	53-98 13-Jul-15	53-98 13-Oct-15	53-98 13-Jul-16	53-98 25-May-17	53-98 19-Jul-17	53-98 18-Oct-17	53-98 8-May-18	53-98 24-Jul-18	53-98 11-Oct-18	53-98 15-Jul-19	53-98 7-Oct-19
1,1,1,2-Tetrachloroethane	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.1		< 0.5	
1,1,1-Trichloroethane	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.1		< 0.5	
1,1,2,2 Tetrachloroethane	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.4		< 0.5	
1,1,2-Trichloroethane	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.1		< 0.5	
1,1-Dichloroethane	µg/L	N/A							< 0.5		< 0.5		-			< 0.1		< 0.5	
1,1-Dichloroethylene	µg/L	14											< 0.5			< 0.1		< 0.5	
Ethylene Dibromide	µg/L	N/A							< 0.2		< 0.5		< 0.2			< 0.1		< 0.2	
1,2-Dichlorobenzene	µg/L	3							< 0.5		< 0.5		< 0.5			< 0.1		< 0.5	
1,2-Dichloroethane	µg/L	5							< 0.5		< 0.5		< 0.5			< 0.1		< 0.5	
1,2-Dichloropropane	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.1		< 0.5	
1,3-Dichlorobenzene	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.1		< 0.5	
1,4-Dichlorobenzene	µg/L	1							< 0.5		< 0.5		< 0.5			< 0.2		< 0.5	
Methyl Ethyl Ketone	µg/L	N/A									< 20		< 20			< 1		< 20	
Methyl Isobutyl Ketone	µg/L	N/A									< 20					< 1		< 20	
Acetone	µg/L	N/A							< 30		< 30		< 0.5			< 2		< 30	
Benzene	µg/L	5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A							< 2		< 2		< 30			< 0.1		< 2	
Bromoform	µg/L	N/A							< 5		< 5		< 0.5			< 0.1		< 5	
Bromomethane	µg/L	N/A									< 0.5		< 2			< 0.3		< 0.5	
Carbon Tetrachloride	µg/L	5							< 0.2		< 0.2		< 0.2			< 0.2		< 0.2	
Chlorobenzene	µg/L	80							< 0.5		< 0.5					< 0.2		< 0.5	
Chloroform	µg/L	N/A							< 1		< 1		< 1			< 0.3		< 1	
cis 1,2-Dichloroethene	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.1		< 0.5	
cis 1,3-Dichloroethene	µg/L	N/A							< 0.5				< 0.5			< 0.1		< 0.5	
Dibromochloromethane	µg/L	N/A							< 2		< 0.5		< 2			< 0.1		< 2	
Dichlorodifluoromethane	µg/L	N/A									< 2							< 5	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	<1	<1	<1	< 1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.1		< 0.5	< 0.5	< 0.5	< 1.0	< 0.4	< 1.0	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A						< 2		< 2			< 2			< 1		< 2	
Methylene Chloride	µg/L	N/A						< 5								< 0.3			
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	< 1.1	< 1.1	<1.1	<1.1	<1.1												

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	53-98 5-May-20	53-98 13-Jul-20	53-98 13-Oct-20	53-98 3-May-21	53-98 5-Jul-21	53-98 14-Oct-21	53-98 3-May-22	53-98 28-Jul-22	53-98 25-Oct-22	53-98 12-Jul-23	53-98 18-Oct-23	53-98 6-May-24	53-98 29-Jul-24	53-98 16-Oct-24	54-98 26-May-15	54-98 15-Oct-15	54-98 24-May-17
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5			<0.5				
1,1,1-Trichloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5			<0.5				
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 1.0	< 0.5	< 1.0		< 0.5			< 0.5		< 0.5			<0.5				
1,1,2-Trichloroethane	µg/L	N/A	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5			<0.5				
1,1-Dichloroethane	µg/L	N/A	< 1.1	< 0.5	< 1.1		< 0.5			< 0.5		< 0.5			<0.5				
1,1-Dichloroethylene	µg/L	14		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
Ethylene Dibromide	µg/L	N/A		< 0.2			< 0.2			< 0.2		< 0.2			<0.2				
1,2-Dichlorobenzene	µg/L	3		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
1,2-Dichloroethane	µg/L	5		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
1,2-Dichloropropane	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
1,3-Dichlorobenzene	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
1,4-Dichlorobenzene	µg/L	1		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
Methyl Ethyl Ketone	µg/L	N/A		< 20			< 20			< 20		< 20			<2				
Methyl Isobutyl Ketone	µg/L	N/A		< 20			< 20			< 20		< 20			<20				
Acetone	µg/L	N/A		< 30			< 30			< 30		< 30			<30				
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A		< 2			< 2			< 2		< 2			<2				
Bromoform	µg/L	N/A		< 5			< 5			< 5		< 5			<5				
Bromomethane	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
Carbon Tetrachloride	µg/L	5		< 0.2			< 0.2			< 0.2		< 0.2			<0.2				
Chlorobenzene	µg/L	80		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
Chloroform	µg/L	N/A		< 1			< 1			< 1		< 1			<1				
cis 1,2-Dichloroethene	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
cis 1,3-Dichloroethene	µg/L	N/A		< 0.5			< 0.5			< 0.5		< 0.5			<0.5				
Dibromochloromethane	µg/L	N/A		< 2			< 2			< 2		< 2			<2				
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	< 1.0	< 0.4	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A		< 2			< 2			< 2		< 2			<2				
Methylene Chloride	µg/L	N/A		< 5			< 5			< 5		< 5			<5			<5	
Vinyl Chloride	µg/L	2					< 0.2			< 0.2		< 0.2			<0.2				
Trichloroethylene	µg/L	5					< 0.5			< 0.5		< 0.5			<0.5				
Xylene, m,p,o-	µg/L	300				< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	<1.1			

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	54-98 16-Oct-17	54-98 8-May-18	54-98 11-Oct-18	54-98 10-May-19	54-98 7-Oct-19	55-98-I 29-May-15	55-98-I 14-Jul-15	55-98-I 19-Oct-15	55-98-I 13-Jul-16	55-98-I 24-May-17	55-98-I 19-Jul-17	55-98-I 17-Oct-17	55-98-I 8-May-18	55-98-I 24-Jul-18	55-98-I 11-Oct-18	55-98-I 8-May-19	55-98-I 15-Jul-19
1,1,1,2-Tetrachloroethane	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,1,1-Trichloroethane	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.4			< 0.5
1,1,2-Trichloroethane	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,1-Dichloroethane	µg/L	N/A							< 0.5		< 0.5		-			< 0.1			< 0.5
1,1-Dichloroethylene	µg/L	14											< 0.5			< 0.1			< 0.5
Ethylene Dibromide	µg/L	N/A							< 0.2		< 0.5		< 0.2			< 0.1			< 0.2
1,2-Dichlorobenzene	µg/L	3							< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,2-Dichloroethane	µg/L	5							< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,2-Dichloropropane	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,3-Dichlorobenzene	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
1,4-Dichlorobenzene	µg/L	1							< 0.5		< 0.5		< 0.5			< 0.2			< 0.5
Methyl Ethyl Ketone	µg/L	N/A									< 20		< 20			< 1			< 20
Methyl Isobutyl Ketone	µg/L	N/A									< 20		< 20	< 1.0		< 1			< 20
Acetone	µg/L	N/A							< 30		< 30		< 0.5			< 2			< 30
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A							< 2		< 2		< 30			< 0.1			< 2
Bromoform	µg/L	N/A							< 5		< 5		< 0.5			< 0.1			< 5
Bromomethane	µg/L	N/A									< 0.5		< 2			< 0.3			< 0.5
Carbon Tetrachloride	µg/L	5							< 0.2		< 0.2		< 0.2			< 0.2			< 0.2
Chlorobenzene	µg/L	80							< 0.5		< 0.5					< 0.2			< 0.5
Chloroform	µg/L	N/A							< 1		< 1		< 1			< 0.3			< 1
cis 1,2-Dichloroethene	µg/L	N/A							< 0.5		< 0.5		< 0.5			< 0.1			< 0.5
cis 1,3-Dichloroethene	µg/L	N/A							< 0.5				< 0.5			< 0.1			< 0.5
Dibromochloromethane	µg/L	N/A							< 2		< 0.5		< 2			< 0.1			< 2
Dichlorodifluoromethane	µg/L	N/A									< 2								< 5
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.5	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 1.1	< 1.0		< 1.0	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A						< 2		< 2			< 2			< 1			< 2
Methylene Chloride	µg/L	N/A						< 5			<5					< 0.3			
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300																	

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	55-98-I 7-Oct-19	55-98-I 5-May-20	55-98-I 13-Jul-20	55-98-I 13-Oct-20	55-98-I 3-May-21	55-98-I 5-Jul-21	55-98-I 14-Oct-21	55-98-I 3-May-22	55-98-I 28-Jul-22	55-98-I 12-Jul-23	55-98-I 18-Oct-23	55-98-I 6-May-24	55-98-I 29-Jul-24	55-98-I 16-Oct-24	55-98-II 29-May-15	55-98-II 14-Jul-15	55-98-II 19-Oct-15
1,1,1,2-Tetrachloroethane	µg/L	N/A		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5	< 0.5			<0.5			< 0.5	
1,1,1-Trichloroethane	µg/L	N/A		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5	< 0.5			<0.5			< 0.5	
1,1,2,2 Tetrachloroethane	µg/L	N/A		< 1.0	< 0.5	< 1.0		< 0.5			< 0.5	< 0.5			<0.5			< 0.5	
1,1,2-Trichloroethane	µg/L	N/A		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5	< 0.5			<0.5			< 0.5	
1,1-Dichloroethane	µg/L	N/A		< 1.1	< 0.5	< 1.1		< 0.5			< 0.5	< 0.5			<0.5			< 0.5	
1,1-Dichloroethylene	µg/L	14			< 0.5			< 0.5			< 0.5	< 0.5			<0.5				
Ethylene Dibromide	µg/L	N/A			< 0.2			< 0.2			< 0.2	< 0.2			<0.2			< 0.2	
1,2-Dichlorobenzene	µg/L	3			< 0.5			< 0.5			< 0.5	< 0.5			<0.5			< 0.5	
1,2-Dichloroethane	µg/L	5			< 0.5			< 0.5			< 0.5	< 0.5			<0.5			< 0.5	
1,2-Dichloropropane	µg/L	N/A			< 0.5			< 0.5			< 0.5	< 0.5			<0.5			< 0.5	
1,3-Dichlorobenzene	µg/L	N/A			< 0.5			< 0.5			< 0.5	< 0.5			<0.5			< 0.5	
1,4-Dichlorobenzene	µg/L	1			< 0.5			< 0.5			< 0.5	< 0.5			<0.5			< 0.5	
Methyl Ethyl Ketone	µg/L	N/A			< 20			< 20			< 20	< 20			<2				
Methyl Isobutyl Ketone	µg/L	N/A			< 20			< 20			< 20	< 20			<20				
Acetone	µg/L	N/A			< 30			< 30			< 30	< 30			<30			< 30	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A			< 2			< 2			< 2	< 2			<2			< 2	
Bromoform	µg/L	N/A			< 5			< 5			< 5	< 5			<5			< 5	
Bromomethane	µg/L	N/A			< 0.5			< 0.5			< 0.5	< 0.5			<0.5				
Carbon Tetrachloride	µg/L	5			< 0.2			< 0.2			< 0.2	< 0.2			<0.2			< 0.2	
Chlorobenzene	µg/L	80			< 0.5			< 0.5			< 0.5	< 0.5			<0.5			< 0.5	
Chloroform	µg/L	N/A			< 1			< 1			< 1	< 1			<1			< 1	
cis 1,2-Dichloroethene	µg/L	N/A			< 0.5			< 0.5			< 0.5	< 0.5			<0.5			< 0.5	
cis 1,3-Dichloroethene	µg/L	N/A			< 0.5			< 0.5			< 0.5	< 0.5			<0.5			< 0.5	
Dibromochloromethane	µg/L	N/A			< 2			< 2			< 2	< 2			<2			< 2	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A			< 2			< 2			< 2	< 2			<2		< 2		< 2
Methylene Chloride	µg/L	N/A			< 5			< 5			< 5	< 5			<5		< 5		
Vinyl Chloride	µg/L	2						< 0.2			< 0.2	< 0.2			<0.2				
Trichloroethylene	µg/L	5						< 0.5			< 0.5	< 0.5			<0.5				
Xylene, m,p,o-	µg/L	300					< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	<1.1			

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	55-98-II 13-Jul-16	55-98-II 24-May-17	55-98-II 19-Jul-17	55-98-II 17-Oct-17	55-98-II 24-Jul-18	55-98-II 11-Oct-18	55-98-II 8-May-19	55-98-II 15-Jul-19	55-98-II 7-Oct-19	55-98-II 5-May-20	55-98-II 13-Oct-20	55-98-II 3-May-21	55-98-II 5-Jul-21	55-98-II 14-Oct-21	55-98-II 3-May-22	55-98-II 28-Jul-22	55-98-II 25-Oct-22
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5		< 0.5		< 0.1			< 0.5		< 0.5	< 0.5		< 0.5			< 0.5	
1,1,1-Trichloroethane	µg/L	N/A	< 0.5		< 0.5		< 0.1			< 0.5		< 0.5	< 0.5		< 0.5			< 0.5	
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 0.5		< 0.5		< 0.4			< 0.5		< 1.0	< 1.0		< 0.5			< 0.5	
1,1,2-Trichloroethane	µg/L	N/A	< 0.5		< 0.5		< 0.1			< 0.5		< 0.5	< 0.5		< 0.5			< 0.5	
1,1-Dichloroethane	µg/L	N/A	< 0.5		-		< 0.1			< 0.5		< 1.1	< 1.1		< 0.5			< 0.5	
1,1-Dichloroethylene	µg/L	14			< 0.5		< 0.1			< 0.5					< 0.5			< 0.5	
Ethylene Dibromide	µg/L	N/A	< 0.5		< 0.2		< 0.1			< 0.2					< 0.2			< 0.2	
1,2-Dichlorobenzene	µg/L	3	< 0.5		< 0.5		< 0.1			< 0.5					< 0.5			< 0.5	
1,2-Dichloroethane	µg/L	5	< 0.5		< 0.5		< 0.1			< 0.5					< 0.5			< 0.5	
1,2-Dichloropropane	µg/L	N/A	< 0.5		< 0.5		< 0.1			< 0.5					< 0.5			< 0.5	
1,3-Dichlorobenzene	µg/L	N/A	< 0.5		< 0.5		< 0.1			< 0.5					< 0.5			< 0.5	
1,4-Dichlorobenzene	µg/L	1	< 0.5		< 0.5		< 0.2			< 0.5					< 0.5			< 0.5	
Methyl Ethyl Ketone	µg/L	N/A	< 20		< 20		< 1			< 20					< 20			< 20	
Methyl Isobutyl Ketone	µg/L	N/A	< 20		< 20		< 1			< 20					< 20			< 20	
Acetone	µg/L	N/A	< 30		< 0.5		< 2			< 30					< 30			< 30	
Benzene	µg/L	5	< 0.5	**0.6**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A	< 2		< 30		< 0.1			< 2					< 2			< 2	
Bromoform	µg/L	N/A	< 5		< 0.5		< 0.1			< 5					< 5			< 5	
Bromomethane	µg/L	N/A	< 0.5		< 2		< 0.3			< 0.5					< 0.5			< 0.5	
Carbon Tetrachloride	µg/L	5	< 0.2		< 0.2		< 0.2			< 0.2					< 0.2			< 0.2	
Chlorobenzene	µg/L	80	< 0.5				< 0.2			< 0.5					< 0.5			< 0.5	
Chloroform	µg/L	N/A	< 1		< 1		< 0.3			< 1					< 1			< 1	
cis 1,2-Dichloroethene	µg/L	N/A	< 0.5		< 0.5		< 0.1			< 0.5					< 0.5			< 0.5	
cis 1,3-Dichloroethene	µg/L	N/A			< 0.5		< 0.1			< 0.5					< 0.5			< 0.5	
Dibromochloromethane	µg/L	N/A	< 0.5		< 2		< 0.1			< 2					< 2			< 2	
Dichlorodifluoromethane	µg/L	N/A	< 2							< 5									
Ethylbenzene	µg/L	2.4		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A		< 0.5	< 0.5	< 0.5	< 0.4	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A		< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A			< 2		< 1			< 2					< 2			< 2	
Methylene Chloride	µg/L	N/A					< 0.3								< 5			< 5	
Vinyl Chloride	µg/L	2													< 0.2			< 0.2	
Trichloroethylene	µg/L	5													< 0.5			< 0.5	
Xylene, m,p,o-	µg/L	300												< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	55-98-II 12-Jul-23	55-98-II 18-Oct-23	55-98-II 6-May-24	55-98-II (Dup) 6-May-24	55-98-II 29-Jul-24	55-98-II 16-Oct-24	55-98-II (Dup) 16-Oct-24	56-02-I 28-May-15	56-02-I 15-Oct-15	56-02-I 24-May-17	56-02-I 16-Oct-17	56-02-I 8-May-18	56-02-I 11-Oct-18	56-02-I 10-May-19	56-02-I 8-Oct-19	56-02-I 5-May-20	56-02-I 13-Jul-20
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5				<0.5											< 0.5	< 0.5
1,1,1-Trichloroethane	µg/L	N/A	< 0.5				<0.5											< 0.5	< 0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 0.5				<0.5											< 1.0	< 0.5
1,1,2-Trichloroethane	µg/L	N/A	< 0.5				<0.5											< 0.5	< 0.5
1,1-Dichloroethane	µg/L	N/A	< 0.5				<0.5											< 1.1	< 0.5
1,1-Dichloroethylene	µg/L	14	< 0.5				<0.5												< 0.5
Ethylene Dibromide	µg/L	N/A	< 0.2				<0.2												< 0.2
1,2-Dichlorobenzene	µg/L	3	< 0.5				<0.5												< 0.5
1,2-Dichloroethane	µg/L	5	< 0.5				<0.5												< 0.5
1,2-Dichloropropane	µg/L	N/A	< 0.5				<0.5												< 0.5
1,3-Dichlorobenzene	µg/L	N/A	< 0.5				<0.5												< 0.5
1,4-Dichlorobenzene	µg/L	1	< 0.5				<0.5												< 0.5
Methyl Ethyl Ketone	µg/L	N/A	< 20				<2												< 20
Methyl Isobutyl Ketone	µg/L	N/A	< 20				<20												< 20
Acetone	µg/L	N/A	< 30				<30												< 30
Benzene	µg/L	5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A	< 2				<2												< 2
Bromoform	µg/L	N/A	< 5				<5												< 5
Bromomethane	µg/L	N/A	< 0.5				<0.5												< 0.5
Carbon Tetrachloride	µg/L	5	< 0.2				<0.2												< 0.2
Chlorobenzene	µg/L	80	< 0.5				<0.5												< 0.5
Chloroform	µg/L	N/A	< 1				<1												< 1
cis 1,2-Dichloroethene	µg/L	N/A	< 0.5				<0.5												< 0.5
cis 1,3-Dichloroethene	µg/L	N/A	< 0.5				<0.5												< 0.5
Dibromochloromethane	µg/L	N/A	< 2				<2												< 2
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	<1	<1	<1	<1	<1	<1	< 0.4	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.1	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A	< 2				<2												< 2
Methylene Chloride	µg/L	N/A	< 5				<5												< 5
Vinyl Chloride	µg/L	2	< 0.2				<0.2												
Trichloroethylene	µg/L	5	< 0.5				<0.5												
Xylene, m,p,o-	µg/L	300	< 1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1										

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	56-02-I 13-Oct-20	56-02-I 3-May-21	56-02-I 5-Jul-21	56-02-I 14-Oct-21	56-02-I 3-May-22	56-02-I 28-Jul-22	56-02-I 12-Jul-23	56-02-I 18-Oct-23	56-02-I 6-May-24	56-02-I (Dup) 6-May-24	56-02-I 29-Jul-24	56-02-I 16-Oct-24	56-02-I (Dup) 16-Oct-24	56-02-II 28-May-15	56-02-II 15-Oct-15	56-02-II 16-Oct-16	56-02-II 24-May-17
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5		< 0.5			< 0.5	< 0.5				<0.5						
1,1,1-Trichloroethane	µg/L	N/A	< 0.5		< 0.5			< 0.5	< 0.5				<0.5						
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 1.0		< 0.5			< 0.5	< 0.5				<0.5						
1,1,2-Trichloroethane	µg/L	N/A	< 0.5		< 0.5			< 0.5	< 0.5				<0.5						
1,1-Dichloroethane	µg/L	N/A	< 1.1		< 0.5			< 0.5	< 0.5				<0.5						
1,1-Dichloroethylene	µg/L	14			< 0.5			< 0.5	< 0.5				<0.5						
Ethylene Dibromide	µg/L	N/A			< 0.2			< 0.2	< 0.2				<0.2						
1,2-Dichlorobenzene	µg/L	3			< 0.5			< 0.5	< 0.5				<0.5						
1,2-Dichloroethane	µg/L	5			< 0.5			< 0.5	< 0.5				<0.5						
1,2-Dichloropropane	µg/L	N/A			< 0.5			< 0.5	< 0.5				<0.5						
1,3-Dichlorobenzene	µg/L	N/A			< 0.5			< 0.5	< 0.5				<0.5						
1,4-Dichlorobenzene	µg/L	1			< 0.5			< 0.5	< 0.5				<0.5						
Methyl Ethyl Ketone	µg/L	N/A			< 20			< 20	< 20				<2						
Methyl Isobutyl Ketone	µg/L	N/A			< 20			< 20	< 20				<20						
Acetone	µg/L	N/A			< 30			< 30	< 30				<30						
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A			< 2			< 2	< 2				<2						
Bromoform	µg/L	N/A			< 5			< 5	< 5				<5						
Bromomethane	µg/L	N/A			< 0.5			< 0.5	< 0.5				<0.5						
Carbon Tetrachloride	µg/L	5			< 0.2			< 0.2	< 0.2				<0.2						
Chlorobenzene	µg/L	80			< 0.5			< 0.5	< 0.5				<0.5						
Chloroform	µg/L	N/A			< 1			< 1	< 1				<1						
cis 1,2-Dichloroethene	µg/L	N/A			< 0.5			< 0.5	< 0.5				<0.5						
cis 1,3-Dichloroethene	µg/L	N/A			< 0.5			< 0.5	< 0.5				<0.5						
Dibromochloromethane	µg/L	N/A			< 2			< 2	< 2				<2						
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	<1	<1	< 0.4	< 0.4		< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.1	< 0.1	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A			< 2			< 2	< 2				<2						
Methylene Chloride	µg/L	N/A			< 5			< 5	< 5				<5					<5	
Vinyl Chloride	µg/L	2			< 0.2			< 0.2	< 0.2				<0.2						
Trichloroethylene	µg/L	5			< 0.5			< 0.5	< 0.5				<0.5						
Xylene, m,p,o-	µg/L	300		< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1				

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	56-02-II 16-Oct-17	56-02-II 8-May-18	56-02-II 11-Oct-18	56-02-II 10-May-19	56-02-II 8-Oct-19	56-02-II 13-Oct-20	56-02-II 25-Oct-22	57-02-I 29-May-15	57-02-I 13-Jul-15	57-02-I 13-Oct-15	57-02-I 13-Jul-16	57-02-I 25-May-17	57-02-I 20-Jul-17	57-02-I 18-Oct-17	57-02-I 8-May-18	57-02-I 24-Jul-18	57-02-I 11-Oct-18
1,1,1,2-Tetrachloroethane	µg/L	N/A						< 0.5			< 0.5		< 0.5		< 0.5			< 0.1	
1,1,1-Trichloroethane	µg/L	N/A						< 0.5			< 0.5		< 0.5		< 0.5			< 0.1	
1,1,2,2 Tetrachloroethane	µg/L	N/A						< 1.0			< 0.5		< 0.5		< 0.5			< 0.4	
1,1,2-Trichloroethane	µg/L	N/A						< 0.5			< 0.5		< 0.5		< 0.5			< 0.1	
1,1-Dichloroethane	µg/L	N/A						< 1.1			< 0.5		< 0.5		-			< 0.1	
1,1-Dichloroethylene	µg/L	14													< 0.5			< 0.1	
Ethylene Dibromide	µg/L	N/A									< 0.2		< 0.5		< 0.2			< 0.1	
1,2-Dichlorobenzene	µg/L	3									< 0.5		< 0.5		< 0.5			< 0.1	
1,2-Dichloroethane	µg/L	5									< 0.5		< 0.5		< 0.5			< 0.1	
1,2-Dichloropropane	µg/L	N/A									< 0.5		< 0.5		< 0.5			< 0.1	
1,3-Dichlorobenzene	µg/L	N/A									< 0.5		< 0.5		< 0.5			< 0.1	
1,4-Dichlorobenzene	µg/L	1									< 0.5		< 0.5		< 0.5			< 0.2	
Methyl Ethyl Ketone	µg/L	N/A											< 20		< 20			< 1	
Methyl Isobutyl Ketone	µg/L	N/A											< 20					< 1	
Acetone	µg/L	N/A									< 30		< 30		< 0.5			< 2	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A									< 2		< 2		< 30			< 0.1	
Bromoform	µg/L	N/A									< 5		< 5		< 5			< 0.1	
Bromomethane	µg/L	N/A											< 0.5		< 0.5			< 0.3	
Carbon Tetrachloride	µg/L	5									< 0.2		< 0.2		< 0.2			< 0.2	
Chlorobenzene	µg/L	80									< 0.5		< 0.5					< 0.2	
Chloroform	µg/L	N/A									< 1		< 1		< 1			< 0.3	
cis 1,2-Dichloroethene	µg/L	N/A									< 0.5		< 0.5		< 0.5			< 0.1	
cis 1,3-Dichloroethene	µg/L	N/A									< 0.5				< 0.5			< 0.1	
Dibromochloromethane	µg/L	N/A									< 2		< 0.5		< 2			< 0.1	
Dichlorodifluoromethane	µg/L	N/A											< 2						
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1		< 0.5	< 0.5	< 0.5	< 1.0	< 0.4	< 1.0
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A								< 2		< 2			< 2			< 1	
Methylene Chloride	µg/L	N/A								< 5			<5					< 0.3	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300							< 1.1										

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	57-02-I 15-Jul-19	57-02-I 9-Oct-19	57-02-II 29-May-15	57-02-II 13-Jul-15	57-02-II 13-Oct-15	57-02-II 13-Jul-16	57-02-II 25-May-17	57-02-II 20-Jul-17	57-02-II 18-Oct-17	57-02-II 8-May-18	57-02-II 24-Jul-18	57-02-II 11-Oct-18	57-02-II 15-Jul-19	57-02-II 9-Oct-19	57-02-II 5-May-20	57-02-II 13-Jul-20	57-02-II 3-May-21
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5			< 0.5		< 0.5		< 0.5			< 0.1		< 0.5		< 0.5	< 0.5	
1,1,1-Trichloroethane	µg/L	N/A	< 0.5			< 0.5		< 0.5		< 0.5			< 0.1		< 0.5		< 0.5	< 0.5	
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 0.5			< 0.5		< 0.5		< 0.5			< 0.4		< 0.5		< 1.0	< 0.5	
1,1,2-Trichloroethane	µg/L	N/A	< 0.5			< 0.5		< 0.5		< 0.5			< 0.1		< 0.5		< 0.5	< 0.5	
1,1-Dichloroethane	µg/L	N/A	< 0.5			< 0.5		< 0.5		-			< 0.1		< 0.5		< 1.1	< 0.5	
1,1-Dichloroethylene	µg/L	14	< 0.5							< 0.5			< 0.1		< 0.5			< 0.5	
Ethylene Dibromide	µg/L	N/A	< 0.2			< 0.2		< 0.5		< 0.2			< 0.1		< 0.2			< 0.2	
1,2-Dichlorobenzene	µg/L	3	< 0.5			< 0.5		< 0.5		< 0.5			< 0.1		< 0.5			< 0.5	
1,2-Dichloroethane	µg/L	5	< 0.5			< 0.5		< 0.5		< 0.5			< 0.1		< 0.5			< 0.5	
1,2-Dichloropropane	µg/L	N/A	< 0.5			< 0.5		< 0.5		< 0.5			< 0.1		< 0.5			< 0.5	
1,3-Dichlorobenzene	µg/L	N/A	< 0.5			< 0.5		< 0.5		< 0.5			< 0.1		< 0.5			< 0.5	
1,4-Dichlorobenzene	µg/L	1	< 0.5			< 0.5		< 0.5		< 0.5			< 0.2		< 0.5			< 0.5	
Methyl Ethyl Ketone	µg/L	N/A	< 20					< 20		< 20			< 1		< 20			< 20	
Methyl Isobutyl Ketone	µg/L	N/A	< 20					< 20					< 1		< 20			< 20	
Acetone	µg/L	N/A	< 30			< 30		< 30		< 0.5			< 2		< 30			< 30	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A	< 2			< 2		< 2		< 30			< 0.1		< 2			< 2	
Bromoform	µg/L	N/A	< 5			< 5		< 5		< 5			< 0.1		< 5			< 5	
Bromomethane	µg/L	N/A	< 0.5					< 0.5		< 0.5			< 0.3		< 0.5			< 0.5	
Carbon Tetrachloride	µg/L	5	< 0.2			< 0.2		< 0.2		< 0.2			< 0.2		< 0.2			< 0.2	
Chlorobenzene	µg/L	80	< 0.5			< 0.5		< 0.5					< 0.2		< 0.5			< 0.5	
Chloroform	µg/L	N/A	< 1			< 1		**6**		< 1			< 0.3		< 1			< 1	
cis 1,2-Dichloroethene	µg/L	N/A	< 0.5			< 0.5		< 0.5		< 0.5			< 0.1		< 0.5			< 0.5	
cis 1,3-Dichloroethene	µg/L	N/A	< 0.5			< 0.5				< 0.5			< 0.1		< 0.5			< 0.5	
Dibromochloromethane	µg/L	N/A	< 2			< 2		< 0.5		< 2			< 0.1		< 2			< 2	
Dichlorodifluoromethane	µg/L	N/A	< 5					< 2							< 5				
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1		< 0.5	< 0.5	< 0.5	< 1.0	< 0.4	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A	< 2		< 2		< 2			< 2			< 1		< 2			< 2	
Methylene Chloride	µg/L	N/A			< 5			<5					< 0.3					< 5	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300																	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	57-02-II 5-Jul-21	57-02-II 14-Oct-21	57-02-II 3-May-22	57-02-II 28-Jul-22	57-02-II 25-Oct-22	57-02-II 12-Jul-23	57-02-II 18-Oct-23	57-02-II 6-May-24	57-02-II 16-Oct-24	58-I 29-May-15	58-I 13-Jul-15	58-I 13-Oct-15	58-I 25-May-17	58-I 20-Jul-17	58-I 18-Oct-17	58-I 8-May-18	58-I 24-Jul-18
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5			< 0.5		< 0.5					< 0.5			< 0.5			
1,1,1-Trichloroethane	µg/L	N/A	< 0.5			< 0.5		< 0.5					< 0.5			< 0.5			
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 0.5			< 0.5		< 0.5					< 0.5			< 0.5			
1,1,2-Trichloroethane	µg/L	N/A	< 0.5			< 0.5		< 0.5					< 0.5			< 0.5			
1,1-Dichloroethane	µg/L	N/A	< 0.5			< 0.5		< 0.5					< 0.5			-			
1,1-Dichloroethylene	µg/L	14	< 0.5			< 0.5		< 0.5								< 0.5			
Ethylene Dibromide	µg/L	N/A	< 0.2			< 0.2		< 0.2					< 0.2			< 0.2			
1,2-Dichlorobenzene	µg/L	3	< 0.5			< 0.5		< 0.5					< 0.5			< 0.5			
1,2-Dichloroethane	µg/L	5	< 0.5			< 0.5		< 0.5					< 0.5			< 0.5			
1,2-Dichloropropane	µg/L	N/A	< 0.5			< 0.5		< 0.5					< 0.5			< 0.5			
1,3-Dichlorobenzene	µg/L	N/A	< 0.5			< 0.5		< 0.5					< 0.5			< 0.5			
1,4-Dichlorobenzene	µg/L	1	< 0.5			< 0.5		< 0.5					< 0.5			< 0.5			
Methyl Ethyl Ketone	µg/L	N/A	< 20			< 20		< 20								< 20			
Methyl Isobutyl Ketone	µg/L	N/A	< 20			< 20		< 20											
Acetone	µg/L	N/A	< 30			< 30		< 30					< 30			< 0.5			
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
Bromodichloromethane	µg/L	N/A	< 2			< 2		< 2					< 2			< 30			
Bromoform	µg/L	N/A	< 5			< 5		< 5					< 5			< 5			
Bromomethane	µg/L	N/A	< 0.5			< 0.5		< 0.5								< 0.5			
Carbon Tetrachloride	µg/L	5	< 0.2			< 0.2		< 0.2					< 0.2			< 0.2			
Chlorobenzene	µg/L	80	< 0.5			< 0.5		< 0.5					< 0.5						
Chloroform	µg/L	N/A	< 1			< 1		< 1					< 1			< 1			
cis 1,2-Dichloroethene	µg/L	N/A	< 0.5			< 0.5		< 0.5					< 0.5			< 0.5			
cis 1,3-Dichloroethene	µg/L	N/A	< 0.5			< 0.5		< 0.5					< 0.5			< 0.5			
Dibromochloromethane	µg/L	N/A	< 2			< 2		< 2					< 2			< 2			
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	< 1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A	< 2			< 2		< 2				< 2				< 2			
Methylene Chloride	µg/L	N/A	< 5			< 5		< 5											
Vinyl Chloride	µg/L	2	< 0.2			< 0.2		< 0.2											
Trichloroethylene	µg/L	5	< 0.5			< 0.5		< 0.5											
Xylene, m,p,o-	µg/L	300	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1								

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	58-I 11-Oct-18	58-I 16-Jul-19	58-I 9-Oct-19	58-I 5-May-20	58-I 13-Jul-20	58-I 13-Oct-20	58-I 3-May-21	58-I 5-Jul-21	58-I 14-Oct-21	58-I 3-May-22	58-I 28-Jul-22	58-I 25-Oct-22	58-I 12-Jul-23	58-I 18-Oct-23	58-I 6-May-24	58-I 29-Jul-24	58-I 16-Oct-24
1,1,1,2-Tetrachloroethane	µg/L	N/A		< 0.5		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5			<0.5	
1,1,1-Trichloroethane	µg/L	N/A		< 0.5		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5			<0.5	
1,1,2,2 Tetrachloroethane	µg/L	N/A		< 0.5		< 1.0	< 0.5	< 1.0		< 0.5			< 0.5		< 0.5			<0.5	
1,1,2-Trichloroethane	µg/L	N/A		< 0.5		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5			<0.5	
1,1-Dichloroethane	µg/L	N/A		< 0.5		< 1.1	< 0.5	< 1.1		< 0.5			< 0.5		< 0.5			<0.5	
1,1-Dichloroethylene	µg/L	14		< 0.5			< 0.5			< 0.5			< 0.5		< 0.5			<0.5	
Ethylene Dibromide	µg/L	N/A		< 0.2			< 0.2			< 0.2			< 0.2		< 0.2			<0.2	
1,2-Dichlorobenzene	µg/L	3		< 0.5			< 0.5			< 0.5			< 0.5		< 0.5			<0.5	
1,2-Dichloroethane	µg/L	5		< 0.5			< 0.5			< 0.5			< 0.5		< 0.5			<0.5	
1,2-Dichloropropane	µg/L	N/A		< 0.5			< 0.5			< 0.5			< 0.5		< 0.5			<0.5	
1,3-Dichlorobenzene	µg/L	N/A		< 0.5			< 0.5			< 0.5			< 0.5		< 0.5			<0.5	
1,4-Dichlorobenzene	µg/L	1		< 0.5			< 0.5			< 0.5			< 0.5		< 0.5			<0.5	
Methyl Ethyl Ketone	µg/L	N/A		< 20			< 20			< 20			< 20		< 20			<2	
Methyl Isobutyl Ketone	µg/L	N/A		< 20			< 20			< 20			< 20		< 20			<20	
Acetone	µg/L	N/A		< 30			< 30			< 30			< 30		< 30			<30	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	N/A		< 2			< 2			< 2			< 2		< 2			<2	
Bromoform	µg/L	N/A		< 5			< 5			< 5			< 5		< 5			<5	
Bromomethane	µg/L	N/A		< 0.5			< 0.5			< 0.5			< 0.5		< 0.5			<0.5	
Carbon Tetrachloride	µg/L	5		< 0.2			< 0.2			< 0.2			< 0.2		< 0.2			<0.2	
Chlorobenzene	µg/L	80		< 0.5			< 0.5			< 0.5			< 0.5		< 0.5			<0.5	
Chloroform	µg/L	N/A		< 1			< 1			< 1			< 1		< 1			<1	
cis 1,2-Dichloroethene	µg/L	N/A		< 0.5			< 0.5			< 0.5			< 0.5		< 0.5			<0.5	
cis 1,3-Dichloroethene	µg/L	N/A		< 0.5			< 0.5			< 0.5			< 0.5		< 0.5			<0.5	
Dibromochloromethane	µg/L	N/A		< 2			< 2			< 2			< 2		< 2			<2	
Dichlorodifluoromethane	µg/L	N/A		< 5															
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	< 0.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A		< 2			< 2			< 2			< 2		< 2			<2	
Methylene Chloride	µg/L	N/A					< 5			< 5			< 5		< 5			<5	
Vinyl Chloride	µg/L	2								< 0.2			< 0.2		< 0.2			<0.2	
Trichloroethylene	µg/L	5								< 0.5			< 0.5		< 0.5			<0.5	
Xylene, m,p,o-	µg/L	300							< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	59-05 27-May-15	59-05 20-Oct-15	59-05 23-May-17	59-05 18-Oct-17	59-05 8-May-18	59-05 11-Oct-18	59-05 9-May-19	59-05 8-Oct-19	59-05 5-May-20	59-05 13-Oct-20	59-05 3-May-21	59-05 14-Oct-21	59-05 3-May-22	59-05 25-Oct-22	59-05 3-May-23	59-05 18-Oct-23	59-05 6-May-24
1,1,1,2-Tetrachloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1,1-Trichloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1,2,2 Tetrachloroethane	µg/L	N/A									< 1.0	< 1.0							
1,1,2-Trichloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1-Dichloroethane	µg/L	N/A									< 1.1	< 1.1							
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A																	
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300											< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	59-05 16-Oct-24	60-05 27-May-15	60-05 20-Oct-15	60-05 23-May-17	60-05 18-Oct-17	60-05 11-Oct-18	60-05 9-May-19	60-05 8-Oct-19	60-05 5-May-20	60-05 13-Oct-20	60-05 3-May-21	60-05 14-Oct-21	60-05 3-May-22	60-05 25-Oct-22	60-05 3-May-23	60-05 18-Oct-23	60-05 6-May-24
1,1,1,2-Tetrachloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1,1-Trichloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1,2,2 Tetrachloroethane	µg/L	N/A									< 1.0	< 1.0							
1,1,2-Trichloroethane	µg/L	N/A									< 0.5	< 0.5							
1,1-Dichloroethane	µg/L	N/A									< 1.1	< 1.1							
1,1-Dichloroethylene	µg/L	14																	
Ethylene Dibromide	µg/L	N/A																	
1,2-Dichlorobenzene	µg/L	3																	
1,2-Dichloroethane	µg/L	5																	
1,2-Dichloropropane	µg/L	N/A																	
1,3-Dichlorobenzene	µg/L	N/A																	
1,4-Dichlorobenzene	µg/L	1																	
Methyl Ethyl Ketone	µg/L	N/A																	
Methyl Isobutyl Ketone	µg/L	N/A																	
Acetone	µg/L	N/A																	
Benzene	µg/L	5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Bromodichloromethane	µg/L	N/A																	
Bromoform	µg/L	N/A																	
Bromomethane	µg/L	N/A																	
Carbon Tetrachloride	µg/L	5																	
Chlorobenzene	µg/L	80																	
Chloroform	µg/L	N/A																	
cis 1,2-Dichloroethene	µg/L	N/A																	
cis 1,3-Dichloroethene	µg/L	N/A																	
Dibromochloromethane	µg/L	N/A																	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1
o-Xylene	µg/L	N/A	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Toluene	µg/L	N/A	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A																	
Methylene Chloride	µg/L	N/A			< 5														
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1										< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	60-05 16-Oct-24	61-10-I 29-May-15	61-10-I 13-Jul-15	61-10-I 13-Oct-15	61-10-I 13-Jul-16	61-10-I 25-May-17	61-10-I 20-Jul-17	61-10-I 18-Oct-17	61-10-I 8-May-18	61-10-I 24-Jul-18	61-10-I 24-Jul-18	61-10-I 24-Jul-18	61-10-I 11-Oct-18	61-10-I 9-May-19	61-10-I 16-Jul-19	61-10-I 9-Oct-19	61-10-I 5-May-20
1,1,1,2-Tetrachloroethane	µg/L	N/A			< 0.5		< 0.5		< 0.5			< 0.1	< 0.1				< 0.5		< 0.5
1,1,1-Trichloroethane	µg/L	N/A			< 0.5		< 0.5		< 0.5			< 0.1	< 0.1				< 0.5		< 0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A			< 0.5		< 0.5		< 0.5			< 0.4	< 0.4				< 0.5		< 1.0
1,1,2-Trichloroethane	µg/L	N/A			< 0.5		< 0.5		< 0.5			< 0.1	< 0.1				< 0.5		< 0.5
1,1-Dichloroethane	µg/L	N/A			< 0.5		< 0.5		< 0.5			< 0.1	< 0.1				< 0.5		< 1.1
1,1-Dichloroethylene	µg/L	14							< 0.5			< 0.1	< 0.1				< 0.5		
Ethylene Dibromide	µg/L	N/A			< 0.2		< 0.5		< 0.2			< 0.1	< 0.1				< 0.2		
1,2-Dichlorobenzene	µg/L	3			< 0.5		< 0.5		< 0.5			< 0.1	< 0.1				< 0.5		
1,2-Dichloroethane	µg/L	5			< 0.5		< 0.5		< 0.5			< 0.1	< 0.1				< 0.5		
1,2-Dichloropropane	µg/L	N/A			< 0.5		< 0.5		< 0.5			< 0.1	< 0.1				< 0.5		
1,3-Dichlorobenzene	µg/L	N/A			< 0.5		< 0.5		< 0.5			< 0.1	< 0.1				< 0.5		
1,4-Dichlorobenzene	µg/L	1			< 0.5		< 0.5		< 0.5			< 0.2	< 0.2				< 0.5		
Methyl Ethyl Ketone	µg/L	N/A					< 20		< 20			< 1	< 1				< 20		
Methyl Isobutyl Ketone	µg/L	N/A					< 20		< 20			< 1	< 1				< 20		
Acetone	µg/L	N/A			< 30		< 30		< 30			< 2	< 2				< 30		
Benzene	µg/L	5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A			< 2		< 2		< 2			< 0.1	< 0.1				< 2		
Bromoform	µg/L	N/A			< 5		< 5		< 5			< 0.1	< 0.1				< 5		
Bromomethane	µg/L	N/A					< 0.5		< 0.5			< 0.3	< 0.3				< 0.5		
Carbon Tetrachloride	µg/L	5			< 0.2		< 0.2		< 0.2			< 0.2	< 0.2				< 0.2		
Chlorobenzene	µg/L	80			< 0.5		< 0.5					< 0.2	< 0.2				< 0.5		
Chloroform	µg/L	N/A			< 1		< 1		< 1			< 0.3	< 0.3				< 1		
cis 1,2-Dichloroethene	µg/L	N/A			< 0.5		< 0.5		< 0.5			< 0.1	< 0.1				< 0.5		
cis 1,3-Dichloroethene	µg/L	N/A			< 0.5				< 0.5			< 0.1	< 0.1				< 0.5		
Dibromochloromethane	µg/L	N/A			< 2		< 0.5		< 2			< 0.1	< 0.1				< 2		
Dichlorodifluoromethane	µg/L	N/A					< 2										< 5		
Ethylbenzene	µg/L	2.4	<0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	<1	< 0.4	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 0.4	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	<0.5	< 0.1	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.4	< 0.1	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.1		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A		< 2		< 2			< 2			< 1	< 1				< 2		
Methylene Chloride	µg/L	N/A		< 5			< 5					< 0.3	< 0.3						
Vinyl Chloride	µg/L	2																	
Trichloroethylene	µg/L	5																	
Xylene, m,p,o-	µg/L	300	<1.1																

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	61-10-I 13-Jul-20	61-10-I 13-Oct-20	61-10-I 3-May-21	61-10-I 5-Jul-21	61-10-I 14-Oct-21	61-10-I 3-May-22	61-10-I 28-Jul-22	61-10-I 25-Oct-22	61-10-I 12-Jul-23	61-10-I 18-Oct-23	61-10-I 6-May-24	61-10-I 29-Jul-24	61-10-I 16-Oct-24	61-10-I (Dup) 16-Oct-24	61-10-II 29-May-15	61-10-II 13-Jul-15	61-10-II 13-Oct-15
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5			<0.5				< 0.5	
1,1,1-Trichloroethane	µg/L	N/A	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5			<0.5				< 0.5	
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 0.5	< 1.0		< 0.5			< 0.5		< 0.5			<0.5				< 0.5	
1,1,2-Trichloroethane	µg/L	N/A	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5			<0.5				< 0.5	
1,1-Dichloroethane	µg/L	N/A	< 0.5	< 1.1		< 0.5			< 0.5		< 0.5			<0.5				< 0.5	
1,1-Dichloroethylene	µg/L	14	< 0.5			< 0.5			< 0.5		< 0.5			<0.5					
Ethylene Dibromide	µg/L	N/A	< 0.2			< 0.2			< 0.2		< 0.2			<0.2				< 0.2	
1,2-Dichlorobenzene	µg/L	3	< 0.5			< 0.5			< 0.5		< 0.5			<0.5				< 0.5	
1,2-Dichloroethane	µg/L	5	< 0.5			< 0.5			< 0.5		< 0.5			<0.5				< 0.5	
1,2-Dichloropropane	µg/L	N/A	< 0.5			< 0.5			< 0.5		< 0.5			<0.5				< 0.5	
1,3-Dichlorobenzene	µg/L	N/A	< 0.5			< 0.5			< 0.5		< 0.5			<0.5				< 0.5	
1,4-Dichlorobenzene	µg/L	1	< 0.5			< 0.5			< 0.5		< 0.5			<0.5				< 0.5	
Methyl Ethyl Ketone	µg/L	N/A	< 20			< 20			< 20		< 20			<2					
Methyl Isobutyl Ketone	µg/L	N/A	< 20			< 20			< 20		< 20			<20					
Acetone	µg/L	N/A	< 30			< 30			< 30		< 30			<30				< 30	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A	< 2			< 2			< 2		< 2			<2				< 2	
Bromoform	µg/L	N/A	< 5			< 5			< 5		< 5			<5				< 5	
Bromomethane	µg/L	N/A	< 0.5			< 0.5			< 0.5		< 0.5			<0.5					
Carbon Tetrachloride	µg/L	5	< 0.2			< 0.2			< 0.2		< 0.2			<0.2				< 0.2	
Chlorobenzene	µg/L	80	< 0.5			< 0.5			< 0.5		< 0.5			<0.5				< 0.5	
Chloroform	µg/L	N/A	< 1			< 1			< 1		< 1			<1				< 1	
cis 1,2-Dichloroethene	µg/L	N/A	< 0.5			< 0.5			< 0.5		< 0.5			<0.5				< 0.5	
cis 1,3-Dichloroethene	µg/L	N/A	< 0.5			< 0.5			< 0.5		< 0.5			<0.5				< 0.5	
Dibromochloromethane	µg/L	N/A	< 2			< 2			< 2		< 2			<2				< 2	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	<1	< 0.4	< 1.0	< 0.4
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.1	< 0.5	< 0.1
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A	< 2			< 2			< 2		< 2			<2			< 2		< 2
Methylene Chloride	µg/L	N/A	< 5			< 5			< 5		< 5			<5			< 5		
Vinyl Chloride	µg/L	2				< 0.2			< 0.2		< 0.2			<0.2					
Trichloroethylene	µg/L	5				< 0.5			< 0.5		< 0.5			<0.5					
Xylene, m,p,o-	µg/L	300			< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	<1.1	<1.1			

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	61-10-II 13-Jul-16	61-10-II 25-May-17	61-10-II 20-Jul-17	61-10-II 18-Oct-17	61-10-II 8-May-18	61-10-II 24-Jul-18	61-10-II 24-Jul-18	61-10-II 11-Oct-18	61-10-II 9-May-19	61-10-II 16-Jul-19	61-10-II 9-Oct-19	61-10-II 5-May-20	61-10-II 13-Jul-20	61-10-II 13-Oct-20	61-10-II 3-May-21	61-10-II 5-Jul-21	61-10-II 14-Oct-21
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5		< 0.5			< 0.1				< 0.5		< 0.5	< 0.5	< 0.5		< 0.5	
1,1,1-Trichloroethane	µg/L	N/A	< 0.5		< 0.5			< 0.1				< 0.5		< 0.5	< 0.5	< 0.5		< 0.5	
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 0.5		< 0.5			< 0.4				< 0.5		< 1.0	< 0.5	< 1.0		< 0.5	
1,1,2-Trichloroethane	µg/L	N/A	< 0.5		< 0.5			< 0.1				< 0.5		< 0.5	< 0.5	< 0.5		< 0.5	
1,1-Dichloroethane	µg/L	N/A	< 0.5		< 0.5			< 0.1				< 0.5		< 1.1	< 0.5	< 1.1		< 0.5	
1,1-Dichloroethylene	µg/L	14			< 0.5			< 0.1				< 0.5			< 0.5			< 0.5	
Ethylene Dibromide	µg/L	N/A	< 0.5		< 0.2			< 0.1				< 0.2			< 0.2			< 0.2	
1,2-Dichlorobenzene	µg/L	3	< 0.5		< 0.5			< 0.1				< 0.5			< 0.5			< 0.5	
1,2-Dichloroethane	µg/L	5	< 0.5		< 0.5			< 0.1				< 0.5			< 0.5			< 0.5	
1,2-Dichloropropane	µg/L	N/A	< 0.5		< 0.5			< 0.1				< 0.5			< 0.5			< 0.5	
1,3-Dichlorobenzene	µg/L	N/A	< 0.5		< 0.5			< 0.1				< 0.5			< 0.5			< 0.5	
1,4-Dichlorobenzene	µg/L	1	< 0.5		< 0.5			< 0.2				< 0.5			< 0.5			< 0.5	
Methyl Ethyl Ketone	µg/L	N/A	< 20		< 20			< 1				< 20			< 20			< 20	
Methyl Isobutyl Ketone	µg/L	N/A	< 20		< 20			< 1				< 20			< 20			< 20	
Acetone	µg/L	N/A	< 30		< 30			< 2				< 30			< 30			< 30	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A	< 2		< 2			< 0.1				< 2			< 2			< 2	
Bromoform	µg/L	N/A	< 5		< 5			< 0.1				< 5			< 5			< 5	
Bromomethane	µg/L	N/A	< 0.5		< 0.5			< 0.3				< 0.5			< 0.5			< 0.5	
Carbon Tetrachloride	µg/L	5	< 0.2		< 0.2			< 0.2				< 0.2			< 0.2			< 0.2	
Chlorobenzene	µg/L	80	< 0.5					< 0.2				< 0.5			< 0.5			< 0.5	
Chloroform	µg/L	N/A	< 1		< 1			< 0.3				< 1			< 1			< 1	
cis 1,2-Dichloroethene	µg/L	N/A	< 0.5		< 0.5			< 0.1				< 0.5			< 0.5			< 0.5	
cis 1,3-Dichloroethene	µg/L	N/A			< 0.5			< 0.1				< 0.5			< 0.5			< 0.5	
Dibromochloromethane	µg/L	N/A	< 0.5		< 2			< 0.1				< 2			< 2			< 2	
Dichlorodifluoromethane	µg/L	N/A	< 2									< 5							
Ethylbenzene	µg/L	2.4		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A		< 0.5	< 0.5	< 0.5	< 0.5	< 0.4	< 0.1	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A		< 0.5	< 0.5	< 0.5		< 0.1		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A			< 2			< 1				< 2			< 2			< 2	
Methylene Chloride	µg/L	N/A						< 0.3							< 5			< 5	
Vinyl Chloride	µg/L	2																< 0.2	
Trichloroethylene	µg/L	5																< 0.5	
Xylene, m,p,o-	µg/L	300															< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	61-10-II 3-May-22	61-10-II 28-Jul-22	61-10-II 25-Oct-22	61-10-II 12-Jul-23	61-10-II 18-Oct-23	61-10-II 6-May-24	61-10-II 29-Jul-24	61-10-II 16-Oct-24	61-17-I 8-May-18	61-17-I 11-Oct-18	61-17-I 11-Oct-18	61-17-I 9-May-19	61-17-I 9-May-19	61-17-I 9-Oct-19	61-17-I 5-May-20	61-17-I 13-Jul-20	61-17-I 13-Oct-20
1,1,1,2-Tetrachloroethane	µg/L	N/A		< 0.5		< 0.5			<0.5								< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	µg/L	N/A		< 0.5		< 0.5			<0.5								< 0.5	< 0.5	< 0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A		< 0.5		< 0.5			<0.5								< 1.0	< 0.5	< 1.0
1,1,2-Trichloroethane	µg/L	N/A		< 0.5		< 0.5			<0.5								< 0.5	< 0.5	< 0.5
1,1-Dichloroethane	µg/L	N/A		< 0.5		< 0.5			<0.5								< 1.1	< 0.5	< 1.1
1,1-Dichloroethylene	µg/L	14		< 0.5		< 0.5			<0.5									< 0.5	
Ethylene Dibromide	µg/L	N/A		< 0.2		< 0.2			<0.2									< 0.2	
1,2-Dichlorobenzene	µg/L	3		< 0.5		< 0.5			<0.5									< 0.5	
1,2-Dichloroethane	µg/L	5		< 0.5		< 0.5			<0.5									< 0.5	
1,2-Dichloropropane	µg/L	N/A		< 0.5		< 0.5			<0.5									< 0.5	
1,3-Dichlorobenzene	µg/L	N/A		< 0.5		< 0.5			<0.5									< 0.5	
1,4-Dichlorobenzene	µg/L	1		< 0.5		< 0.5			<0.5									< 0.5	
Methyl Ethyl Ketone	µg/L	N/A		< 20		< 20			<2									< 20	
Methyl Isobutyl Ketone	µg/L	N/A		< 20		< 20			<20									< 20	
Acetone	µg/L	N/A		< 30		< 30			<30									< 30	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	**0.7**	< 0.5	< 0.5	< 0.5	**0.5**	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A		< 2		< 2			<2									< 2	
Bromoform	µg/L	N/A		< 5		< 5			<5									< 5	
Bromomethane	µg/L	N/A		< 0.5		< 0.5			<0.5									< 0.5	
Carbon Tetrachloride	µg/L	5		< 0.2		< 0.2			<0.2									< 0.2	
Chlorobenzene	µg/L	80		< 0.5		< 0.5			<0.5									< 0.5	
Chloroform	µg/L	N/A		< 1		< 1			<1									< 1	
cis 1,2-Dichloroethene	µg/L	N/A		< 0.5		< 0.5			<0.5									< 0.5	
cis 1,3-Dichloroethene	µg/L	N/A		< 0.5		< 0.5			<0.5									< 0.5	
Dibromochloromethane	µg/L	N/A		< 2		< 2			<2									< 2	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A		< 2		< 2			<2									< 2	
Methylene Chloride	µg/L	N/A		< 5		< 5			<5									< 5	
Vinyl Chloride	µg/L	2		< 0.2		< 0.2			<0.2										
Trichloroethylene	µg/L	5		< 0.5		< 0.5			<0.5										
Xylene, m,p,o-	µg/L	300	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	<1.1									

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	61-17-I 3-May-21	61-17-I 5-Jul-21	61-17-I 14-Oct-21	61-17-I 3-May-22	61-17-I 28-Jul-22	61-17-I 25-Oct-22	61-17-I 12-Jul-23	61-17-I 18-Oct-23	61-17-I 6-May-24	61-17-I 29-Jul-24	61-17-I 16-Oct-24	62-17-I 13-Oct-20	62-17-I 3-May-21	61-17-II 5-Jul-21	62-17-I 14-Oct-21	62-17-I 3-May-22	62-17-I 28-Jul-22
1,1,1,2-Tetrachloroethane	µg/L	N/A		< 0.5			< 0.5		< 0.5			<0.5		< 0.5		< 0.5			< 0.5
1,1,1-Trichloroethane	µg/L	N/A		< 0.5			< 0.5		< 0.5			<0.5		< 0.5		< 0.5			< 0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A		< 0.5			< 0.5		< 0.5			<0.5		< 1.0		< 0.5			< 0.5
1,1,2-Trichloroethane	µg/L	N/A		< 0.5			< 0.5		< 0.5			<0.5		< 0.5		< 0.5			< 0.5
1,1-Dichloroethane	µg/L	N/A		< 0.5			< 0.5		< 0.5			<0.5		< 1.1		< 0.5			< 0.5
1,1-Dichloroethylene	µg/L	14		< 0.5			< 0.5		< 0.5			<0.5				< 0.5			< 0.5
Ethylene Dibromide	µg/L	N/A		< 0.2			< 0.2		< 0.2			<0.2				< 0.2			< 0.2
1,2-Dichlorobenzene	µg/L	3		< 0.5			< 0.5		< 0.5			<0.5				< 0.5			< 0.5
1,2-Dichloroethane	µg/L	5		< 0.5			< 0.5		< 0.5			<0.5				< 0.5			< 0.5
1,2-Dichloropropane	µg/L	N/A		< 0.5			< 0.5		< 0.5			<0.5				< 0.5			< 0.5
1,3-Dichlorobenzene	µg/L	N/A		< 0.5			< 0.5		< 0.5			<0.5				< 0.5			< 0.5
1,4-Dichlorobenzene	µg/L	1		< 0.5			< 0.5		< 0.5			<0.5				< 0.5			< 0.5
Methyl Ethyl Ketone	µg/L	N/A		< 20			< 20		< 20			<2				< 20			< 20
Methyl Isobutyl Ketone	µg/L	N/A		< 20			< 20		< 20			<20				< 20			< 20
Acetone	µg/L	N/A		< 30			< 30		< 30			<30				< 30			< 30
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A		< 2			< 2		< 2			<2				< 2			< 2
Bromoform	µg/L	N/A		< 5			< 5		< 5			<5				< 5			< 5
Bromomethane	µg/L	N/A		< 0.5			< 0.5		< 0.5			<0.5				< 0.5			< 0.5
Carbon Tetrachloride	µg/L	5		< 0.2			< 0.2		< 0.2			<0.2				< 0.2			< 0.2
Chlorobenzene	µg/L	80		< 0.5			< 0.5		< 0.5			<0.5				< 0.5			< 0.5
Chloroform	µg/L	N/A		< 1			< 1		< 1			<1				< 1			< 1
cis 1,2-Dichloroethene	µg/L	N/A		< 0.5			< 0.5		< 0.5			<0.5				< 0.5			< 0.5
cis 1,3-Dichloroethene	µg/L	N/A		< 0.5			< 0.5		< 0.5			<0.5				< 0.5			< 0.5
Dibromochloromethane	µg/L	N/A		< 2			< 2		< 2			<2				< 2			< 2
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A		< 2			< 2		< 2			<2				< 2			< 2
Methylene Chloride	µg/L	N/A		< 5			< 5		< 5			<5				< 5			< 5
Vinyl Chloride	µg/L	2		< 0.2			< 0.2		< 0.2			<0.2				< 0.2			< 0.2
Trichloroethylene	µg/L	5		< 0.5			< 0.5		< 0.5			<0.5				< 0.5			< 0.5
Xylene, m,p,o-	µg/L	300	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	<1.1	<1.1		< 1.1	< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	62-17-I 25-Oct-22	62-17-I 12-Jul-23	62-17-I 18-Oct-23	62-17-I 6-May-24	62-17-I 16-Oct-24	62-17-II 8-May-18	62-17-II 11-Oct-18	62-17-II 9-May-19	62-17-II 9-Oct-19	62-17-II 5-May-20	62-17-II 13-Jul-20	62-17-II 13-Oct-20	62-17-II 3-May-21	62-17-II 14-Oct-21	62-17-II 3-May-22	62-17-II 28-Jul-22	62-17-II 25-Oct-22
1,1,1,2-Tetrachloroethane	µg/L	N/A		< 0.5								< 0.5	< 0.5	< 0.5				< 0.5	
1,1,1-Trichloroethane	µg/L	N/A		< 0.5								< 0.5	< 0.5	< 0.5				< 0.5	
1,1,2,2 Tetrachloroethane	µg/L	N/A		< 0.5								< 1.0	< 0.5	< 1.0				< 0.5	
1,1,2-Trichloroethane	µg/L	N/A		< 0.5								< 0.5	< 0.5	< 0.5				< 0.5	
1,1-Dichloroethane	µg/L	N/A		< 0.5								< 1.1	< 0.5	< 1.1				< 0.5	
1,1-Dichloroethylene	µg/L	14		< 0.5									< 0.5					< 0.5	
Ethylene Dibromide	µg/L	N/A		< 0.2									< 0.2					< 0.2	
1,2-Dichlorobenzene	µg/L	3		< 0.5									< 0.5					< 0.5	
1,2-Dichloroethane	µg/L	5		< 0.5									< 0.5					< 0.5	
1,2-Dichloropropane	µg/L	N/A		< 0.5									< 0.5					< 0.5	
1,3-Dichlorobenzene	µg/L	N/A		< 0.5									< 0.5					< 0.5	
1,4-Dichlorobenzene	µg/L	1		< 0.5									< 0.5					< 0.5	
Methyl Ethyl Ketone	µg/L	N/A		< 20									< 20					< 20	
Methyl Isobutyl Ketone	µg/L	N/A		< 20									< 20					< 20	
Acetone	µg/L	N/A		< 30									< 30					< 30	
Benzene	µg/L	5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A		< 2									< 2					< 2	
Bromoform	µg/L	N/A		< 5									< 5					< 5	
Bromomethane	µg/L	N/A		< 0.5									< 0.5					< 0.5	
Carbon Tetrachloride	µg/L	5		< 0.2									< 0.2					< 0.2	
Chlorobenzene	µg/L	80		< 0.5									< 0.5					< 0.5	
Chloroform	µg/L	N/A		< 1									< 1					< 1	
cis 1,2-Dichloroethene	µg/L	N/A		< 0.5									< 0.5					< 0.5	
cis 1,3-Dichloroethene	µg/L	N/A		< 0.5									< 0.5					< 0.5	
Dibromochloromethane	µg/L	N/A		< 2									< 2					< 2	
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	< 1.0	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	<0.5	<0.5	<0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A		< 2									< 2					< 2	
Methylene Chloride	µg/L	N/A		< 5									< 5					< 5	
Vinyl Chloride	µg/L	2		< 0.2														< 0.2	
Trichloroethylene	µg/L	5		< 0.5														< 0.5	
Xylene, m,p,o-	µg/L	300	< 1.1	< 1.1	<1.1	<1.1	<1.1								< 1.1	< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	62-17-II 12-Jul-23	62-17-II 18-Oct-23	62-17-II 6-May-24	62-17-II 29-Jul-24	62-17-II 16-Oct-24	62-17-III 8-May-18	62-17-III 11-Oct-18	62-17-III 16-Jul-19	62-17-III 9-Oct-19	62-17-III 5-May-20	62-17-III 13-Oct-20	62-17-III 3-May-21	62-17-III 14-Oct-21	62-17-III 3-May-22	62-17-III 28-Jul-22	62-17-III 25-Oct-22	62-17-III 12-Jul-23
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5			<0.5						< 0.5	< 0.5				< 0.5		< 0.5
1,1,1-Trichloroethane	µg/L	N/A	< 0.5			<0.5						< 0.5	< 0.5				< 0.5		< 0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 0.5			<0.5						< 1.0	< 1.0				< 0.5		< 0.5
1,1,2-Trichloroethane	µg/L	N/A	< 0.5			<0.5						< 0.5	< 0.5				< 0.5		< 0.5
1,1-Dichloroethane	µg/L	N/A	< 0.5			<0.5						< 1.1	< 1.1				< 0.5		< 0.5
1,1-Dichloroethylene	µg/L	14	< 0.5			<0.5											< 0.5		< 0.5
Ethylene Dibromide	µg/L	N/A	< 0.2			<0.2											< 0.2		< 0.2
1,2-Dichlorobenzene	µg/L	3	< 0.5			<0.5											< 0.5		< 0.5
1,2-Dichloroethane	µg/L	5	< 0.5			<0.5											< 0.5		< 0.5
1,2-Dichloropropane	µg/L	N/A	< 0.5			<0.5											< 0.5		< 0.5
1,3-Dichlorobenzene	µg/L	N/A	< 0.5			<0.5											< 0.5		< 0.5
1,4-Dichlorobenzene	µg/L	1	< 0.5			<0.5											< 0.5		< 0.5
Methyl Ethyl Ketone	µg/L	N/A	< 20			<2											< 20		< 20
Methyl Isobutyl Ketone	µg/L	N/A	< 20			<20											< 20		< 20
Acetone	µg/L	N/A	< 30			<30											< 30		< 30
Benzene	µg/L	5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	N/A	< 2			<2											< 2		< 2
Bromoform	µg/L	N/A	< 5			<5											< 5		< 5
Bromomethane	µg/L	N/A	< 0.5			<0.5											< 0.5		< 0.5
Carbon Tetrachloride	µg/L	5	< 0.2			<0.2											< 0.2		< 0.2
Chlorobenzene	µg/L	80	< 0.5			<0.5											< 0.5		< 0.5
Chloroform	µg/L	N/A	< 1			<1											< 1		< 1
cis 1,2-Dichloroethene	µg/L	N/A	< 0.5			<0.5											< 0.5		< 0.5
cis 1,3-Dichloroethene	µg/L	N/A	< 0.5			<0.5											< 0.5		< 0.5
Dibromochloromethane	µg/L	N/A	< 2			<2											< 2		< 2
Dichlorodifluoromethane	µg/L	N/A																	
Ethylbenzene	µg/L	2.4	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	N/A	< 1.0	<1	<1	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	N/A	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	N/A	< 0.5	<0.5	<0.5	<0.5	<0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A	< 2			<2											< 2		< 2
Methylene Chloride	µg/L	N/A	< 5			<5											< 5		< 5
Vinyl Chloride	µg/L	2	< 0.2			<0.2											< 0.2		< 0.2
Trichloroethylene	µg/L	5	< 0.5			<0.5											< 0.5		< 0.5
Xylene, m,p,o-	µg/L	300	< 1.1	<1.1	<1.1	<1.1	<1.1							< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry
Summary - VOC

Parameters	Units	ODWQS	62-17-III 18-Oct-23	62-17-III 6-May-24	62-17-III 29-Jul-24	62-17-III 16-Oct-24
1,1,1,2-Tetrachloroethane	µg/L	N/A			<0.5	
1,1,1-Trichloroethane	µg/L	N/A			<0.5	
1,1,2,2 Tetrachloroethane	µg/L	N/A			<0.5	
1,1,2-Trichloroethane	µg/L	N/A			<0.5	
1,1-Dichloroethane	µg/L	N/A			<0.5	
1,1-Dichloroethylene	µg/L	14			<0.5	
Ethylene Dibromide	µg/L	N/A			<0.2	
1,2-Dichlorobenzene	µg/L	3			<0.5	
1,2-Dichloroethane	µg/L	5			<0.5	
1,2-Dichloropropane	µg/L	N/A			<0.5	
1,3-Dichlorobenzene	µg/L	N/A			<0.5	
1,4-Dichlorobenzene	µg/L	1			<0.5	
Methyl Ethyl Ketone	µg/L	N/A			<2	
Methyl Isobutyl Ketone	µg/L	N/A			<20	
Acetone	µg/L	N/A			<30	
Benzene	µg/L	5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	N/A			<2	
Bromoform	µg/L	N/A			<5	
Bromomethane	µg/L	N/A			<0.5	
Carbon Tetrachloride	µg/L	5			<0.2	
Chlorobenzene	µg/L	80			<0.5	
Chloroform	µg/L	N/A			<1	
cis 1,2-Dichloroethene	µg/L	N/A			<0.5	
cis 1,3-Dichloroethene	µg/L	N/A			<0.5	
Dibromochloromethane	µg/L	N/A			<2	
Dichlorodifluoromethane	µg/L	N/A				
Ethylbenzene	µg/L	2.4	<0.5	<0.5	<0.5	<0.5
m & p-Xylene	µg/L	N/A	<1	<1	<1	<1
o-Xylene	µg/L	N/A	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	N/A	<0.5	<0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A			<2	
Methylene Chloride	µg/L	N/A			<5	
Vinyl Chloride	µg/L	2			<0.2	
Trichloroethylene	µg/L	5			<0.5	
Xylene, m,p,o-	µg/L	300	<1.1	<1.1	<1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water- Polychlorinated Biphenyls

Units ODWQS	PCB µg/L 3
MW 6-90-II	
12-May-06	**0.20**
26-Oct-06	< 0.04
25-Oct-07	< 0.001
17-Apr-08	**0.50**
22-Oct-08	< 0.001
6-May-09	**0.05**
29-Oct-09	**0.05**
6-May-10	**0.17**
28-Oct-10	**0.32**
5-May-11	**0.05**
27-Oct-11	**0.16**
17-May-12	**0.06**
25-Oct-12	**0.05**
24-Oct-13	< 2
7-May-14	< 0.05
23-Oct-14	< 0.05
16-May-16	< 0.05
23-May-17	**0.48**
12-Nov-19	**0.51**
MW 7-90-II	
26-Apr-07	< 0.001
17-Apr-08	**0.45**
22-Oct-08	< 0.001
6-May-09	**0.05**
29-Oct-09	**0.11**
6-May-10	**0.85**
28-Oct-10	**0.13**
5-May-11	< 0.002
27-Oct-11	< 0.02
17-May-12	**0.03**
25-Oct-12	< 0.03
24-Oct-13	< 0.2
7-May-14	< 0.05
16-May-16	< 0.05
18-Oct-16	< 0.05
8-May-18	< 0.05
8-May-19	< 0.06
8-Oct-19	< 0.05
MW 11-90	
5-Jul-10	< 0.001
27-Jul-11	< 0.001
23-Jul-12	< 0.001
30-Jul-13	< 0.05
29-Jul-14	< 0.05
13-Jul-15	< 0.05
13-Jul-16	< 0.05
20-Jul-17	< 0.05
24-Jul-18	< 0.05
16-Jul-19	< 0.05
26-Jul-22	< 0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05

Units ODWQS	PCB µg/L 3
MW 16-91-I	
5-May-10	< 0.001
26-Oct-10	< 0.001
3-May-11	**0.001**
25-Oct-11	< 0.001
14-May-12	< 0.001
23-Oct-12	< 0.001
29-May-13	< 0.05
22-Oct-13	< 0.4
7-May-14	< 0.05
22-Oct-14	< 0.05
27-May-15	< 0.05
15-Oct-15	< 0.2
17-May-16	< 0.05
13-Oct-16	< 0.05
23-May-17	< 0.05
31-Oct-17	< 0.05
8-May-18	< 0.05
11-Oct-18	< 0.05
9-May-19	< 0.05
8-Oct-19	< 0.05
MW 16-91-II	
5-May-10	< 0.001
26-Oct-10	< 0.001
3-May-11	< 0.001
25-Oct-11	< 0.001
14-May-12	< 0.001
23-Oct-12	< 0.001
29-May-13	< 0.05
22-Oct-13	< 0.4
7-May-14	< 0.05
22-Oct-14	< 0.05
27-May-15	< 0.05
15-Oct-15	< 0.2
17-May-16	< 0.05
13-Oct-16	< 0.05
23-May-17	< 0.05
17-Oct-17	< 0.05
11-Oct-18	< 0.05
9-May-19	< 0.06

Units ODWQS	PCB µg/L 3
MW 21-91-I	
5-May-10	< 0.001
26-Oct-10	< 0.001
3-May-11	< 0.001
25-Oct-11	< 0.001
14-May-12	< 0.001
23-Oct-12	< 0.001
29-May-13	< 0.05
22-Oct-13	< 0.05
7-May-14	< 0.05
22-Oct-14	< 0.05
29-May-15	< 0.05
15-Oct-15	< 0.2
17-May-16	< 0.05
12-Oct-16	< 0.05
23-May-17	< 0.05
23-May-17	< 0.05
17-Oct-17	< 0.05
8-May-18	< 0.05
11-Oct-18	< 0.05
9-May-19	< 0.05
8-Oct-19	< 0.05
MW 21-91-II	
5-May-10	< 0.001
26-Oct-10	< 0.001
3-May-11	< 0.01
26-Oct-11	< 0.001
14-May-12	< 0.002
23-Oct-12	< 0.001
29-May-13	< 0.05
7-May-14	< 0.05
22-Oct-14	< 0.05
29-May-15	< 0.05
15-Oct-15	< 0.2
17-May-16	< 0.05
12-Oct-16	< 0.05
23-May-17	< 0.05
17-Oct-17	< 0.05
8-May-18	< 0.05
11-Oct-18	< 0.05
9-May-19	< 0.05
8-Oct-19	< 0.05

Units ODWQS	PCB µg/L 4
MW 21-91-III	
5-May-10	< 0.001
26-Oct-10	< 0.001
3-May-11	< 0.01
25-Oct-11	< 0.001
14-May-12	< 0.001
23-Oct-12	< 0.001
29-May-13	< 0.05
7-May-14	< 0.05
22-Oct-14	< 0.05
29-May-15	< 0.05
15-Oct-15	< 0.2
17-May-16	< 0.05
12-Oct-16	< 0.05
23-May-17	< 0.05
17-Oct-17	< 0.05
8-May-18	< 0.05
11-Oct-18	< 0.05
9-May-19	< 0.05
8-Oct-19	< 0.05
MW 32-93-I	
29-Jul-08	< 0.001
29-Jul-14	< 0.05
14-Jul-15	< 0.05
19-Jul-17	< 0.05
24-Jul-18	< 0.05
15-Jul-19	< 0.05
13-Jul-20	< 0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05
MW 32-93-II	
26-Jul-07	**0.05**
5-Jul-10	< 0.001
29-Jul-14	< 0.05
14-Jul-15	< 0.05
19-Jul-17	< 0.05
24-Jul-18	< 0.05
28-Jul-22	<0.05
MW 32-93-III	
19-Jul-17	< 0.05
MW 43-93-I	
13-Jul-20	< 0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05
MW 43-93-II	
13-Jul-20	< 0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05

ODWQS - Ontario Drinking Water Quality Standards
Bold indicates detection
Bold Highlighting indicates exceedance

Ground Water- Polychlorinated Biphenyls

Units ODWQS	PCB µg/L 3
MW 44-93-I	
26-Jul-07	**0.02**
29-Jul-08	< 0.001
15-Jul-09	< 0.001
12-Jul-10	< 0.001
28-Jul-11	< 0.001
24-Jul-12	< 0.001
29-Jul-14	< 0.05
14-Jul-15	< 0.05
13-Jul-16	< 0.05
19-Jul-17	< 0.05
24-Jul-18	< 0.05
15-Jul-19	< 0.05
13-Jul-20	< 0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05
MW 44-93-II	
26-Jul-07	**0.02**
29-Jul-08	< 0.001
15-Jul-09	< 0.001
12-Jul-10	< 0.001
28-Jul-11	< 0.001
24-Jul-12	< 0.001
30-Jul-13	< 0.05
29-Jul-14	< 0.05
13-Jul-16	< 0.05
19-Jul-17	< 0.05
24-Jul-18	< 0.05
15-Jul-19	< 0.05
13-Jul-20	< 0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05
MW 45-93	
26-Jul-07	**0.01**
14-Jul-08	< 0.001
15-Jul-09	< 0.001
12-Jul-10	< 0.001
27-Jul-11	**0.001**
24-Jul-12	< 0.001
30-Jul-13	< 0.05
29-Jul-14	< 0.05
14-Jul-15	< 0.05
13-Jul-16	< 0.05
20-Jul-17	< 0.05
24-Jul-18	< 0.05
15-Jul-19	< 0.05
13-Jul-20	< 0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05

Units ODWQS	PCB µg/L 3
MW 53-98	
30-Jul-07	< 0.001
14-Jul-08	< 0.001
15-Jul-09	< 0.001
12-Jul-10	< 0.001
27-Jul-11	< 0.001
28-Jul-11	< 0.001
23-Jul-12	< 0.001
29-Jul-14	< 0.05
13-Jul-15	< 0.05
19-Jul-17	**1.04**
24-Jul-18	< 0.05
15-Jul-19	< 0.05
13-Jul-20	< 0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05
MW 55-98-I	
26-Jul-07	**0.02**
14-Jul-08	< 0.001
15-Jul-09	< 0.001
5-Jul-10	< 0.001
27-Jul-11	< 0.001
24-Jul-12	< 0.001
24-Jul-13	< 0.05
29-Jul-14	< 0.05
14-Jul-15	< 0.05
13-Jul-16	< 0.05
19-Jul-17	**0.84**
24-Jul-18	< 0.05
15-Jul-19	< 0.05
13-Jul-20	< 0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05
MW 55-98-II	
26-Jul-07	**0.02**
14-Jul-08	< 0.001
15-Jul-09	< 0.001
5-Jul-10	< 0.001
28-Jul-11	< 0.001
24-Jul-12	< 0.001
29-Jul-14	< 0.05
14-Jul-15	< 0.05
13-Jul-16	< 0.05
19-Jul-17	**0.65**
24-Jul-18	< 0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
12-Jul-23	<0.05
29-Jul-24	<0.05
MW 56-02-I	
13-Jul-20	<0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
MW 56-02-II	
13-Jul-20	<0.05

Units ODWQS	PCB µg/L 3
MW 57-02-I	
31-Jul-07	< 0.001
14-Jul-08	< 0.001
15-Jul-09	< 0.001
5-Jul-10	< 0.001
26-Jul-11	< 0.001
23-Jul-12	< 0.001
23-Jul-13	< 0.05
29-Jul-14	< 0.05
13-Jul-15	< 0.05
13-Jul-16	< 0.05
20-Jul-17	**0.88**
24-Jul-18	< 0.05
15-Jul-19	< 0.05
13-Jul-20	<0.05
5-Jul-21	<0.05
MW 57-02-II	
30-Jul-07	< 0.001
14-Jul-08	< 0.001
15-Jul-09	< 0.001
5-Jul-10	< 0.001
27-Jul-11	< 0.001
24-Jul-12	< 0.001
23-Jul-13	< 0.05
29-Jul-14	< 0.05
13-Jul-15	< 0.05
13-Jul-16	< 0.05
20-Jul-17	**1.01**
24-Jul-18	< 0.05
15-Jul-19	< 0.05
13-Jul-20	<0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
12-Jul-23	< 0.05
MW 58-02	
30-Jul-07	0.01
14-Jul-08	< 0.001
15-Jul-09	< 0.001
12-Jul-10	< 0.001
27-Jul-11	< 0.001
23-Jul-12	< 0.001
23-Jul-13	< 0.05
29-Jul-14	< 0.05
13-Jul-15	< 0.05
13-Jul-16	< 0.05
20-Jul-17	0.98
16-Jul-19	< 0.05
13-Jul-20	<0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05
MW 59-05	
4-May-09	**0.01**
26-Oct-09	< 0.001
10-Feb-10	< 0.001
4-May-10	< 0.001
26-Oct-10	< 0.001
2-May-11	< 0.001
14-May-12	< 0.001
27-May-13	< 0.05
6-May-14	< 0.05
27-May-15	< 0.05
25-May-16	< 0.05
23-May-17	< 0.05
7-May-18	< 0.05
9-May-19	< 0.05

Units ODWQS	PCB µg/L 4
MW 60-05	
4-May-09	**0.01**
26-Oct-09	**0.01**
10-Feb-10	< 0.001
4-May-10	< 0.001
26-Oct-10	< 0.001
2-May-11	< 0.002
14-May-12	< 0.001
27-May-13	< 0.2
7-May-14	< 0.05
27-May-15	< 0.05
25-May-16	< 0.05
23-May-17	< 0.05
9-May-19	< 0.05
MW 61-10-I	
5-Jul-10	< 0.001
3-Aug-10	< 0.001
26-Jul-11	< 0.001
23-Jul-12	< 0.001
23-Jul-13	< 0.05
29-Jul-14	< 0.05
13-Jul-15	< 0.05
13-Jul-16	< 0.05
20-Jul-17	< 0.05
24-Jul-18	< 0.05
16-Jul-19	< 0.05
13-Jul-20	<0.05
5-Jul-21	<0.05
12-Jul-23	< 0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05
MW 61-10-II	
5-Jul-10	< 0.001
3-Aug-10	< 0.001
26-Jul-11	< 0.001
23-Jul-12	< 0.001
23-Jul-13	< 0.05
29-Jul-14	< 0.05
13-Jul-15	< 0.05
13-Jul-16	< 0.05
20-Jul-17	< 0.05
24-Jul-18	< 0.05
16-Jul-19	< 0.05
13-Jul-20	<0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05
MW 61-17-I	
13-Jul-20	<0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05
MW 62-17-II	
13-Jul-20	<0.05
5-Jul-21	<0.05
28-Jul-22	<0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05
MW 62-17-III	
28-Jul-22	<0.05
12-Jul-23	< 0.05
29-Jul-24	<0.05

ODWQS - Ontario Drinking Water Quality Standards
Bold indicates detection
Bold Highlighting indicates exceedance

Leachate Chamber Chemistry Summary - General Water Quality

Parameters	Units	LPC-1 21-Jan-15	LPC-1 16-Mar-15	LPC-1 20-Apr-15	LPC-1 27-May-15	LPC-1 22-Jun-15	LPC-1 13-Jul-15	LPC-1 5-Aug-15	LPC-1 30-Sep-15	LPC-1 20-Oct-15	LPC-1 18-Nov-15	LPC-1 16-Dec-15	LPC-1 27-Jan-16	LPC-1 4-Feb-16	LPC-1 30-Mar-16	LPC-1 12-Apr-16	LPC-1 21-Apr-16	LPC-1 24-May-16	LPC-1 14-Jun-16	LPC-1 14-Jul-16
Alkalinity	mg/L	667	385	452	704	636	674	709	682	716	605	623	607	478	543	518	638	665	709	734
Unionized Ammonia	mg/L														< 0.01	0.09	0.18	0.01	0.05	0.23
Ammonia	mg/L	15.7	6.08	5.21	17.6	15.5	18.1	27.4	23.2	19.8	14.2	14.6	11.7	7.1	9.57	9.13	15.5	18.1	21.3	21.8
BOD	mg/L	7			8					4	4	7	3		4	< 3	6	9	6	9
Calcium	mg/L	195	109	146	213	199	175	189	184	167	172	160	172	146	160	137	195	177	188	179
COD	mg/L	56	42	30	66	44	55	56	62	43	33	55	40	46	34	29	53	55	50	55
Chloride	mg/L	150	102	69.6	156	23.6	142	174	180	201	148	124	119	84.3	95.4	84.7	133	143	170	196
Conductivity	µs/cm	1720	1080	1080	1810	1630	1720	1850	1870	1970	1630	1680	1530	1200	1330	1270	1610	1750	1870	2010
Cyanide	mg/L	< 0.005			< 0.005					< 0.005					< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DOC	mg/L	16	17.1	15.2	6.5	5.3	6.5	6.5	7.1	13.2	11.7	13.9	11.4	8.7	9.7	11.1	12.6	12.1	12.9	19.2
Fluoride	mg/L	0.2	0.1	0.2	0.1	0.1	0.1	< 0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2
Hardness	mg/L	628	336	431	695	627	574	629	608	597	547	510	536	438	490	420	624	583	630	617
Iron	mg/L	20.8	7.76	12.1	40.5	23.8	5.81	20.7	22.3	8.58	12.5	9.5	11.5	16.2	14.6	9.4	30.5	11	21.1	14.9
Magnesium	mg/L	34.5	15.6	15.9	39.6	31.3	33	38.1	35.7	43.7	28.6	27	25.8	17.5	21.9	18.8	33.4	34.1	38.9	41.4
Manganese	mg/L	0.655	0.251	0.275	0.689	0.727	0.462	0.572	0.559	0.448	0.625	0.519	0.525	0.336	0.439	0.306	0.62	0.545	0.463	0.418
Mercury	mg/L	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	mg/L	0.2	0.7	0.5	0.1	< 0.1	0.2	0.1	< 0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2
Nitrite	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Tot Kjel N	mg/L	17.1	6.8	6.7	21	17.8	18.1	36.5	23.2	26.7	16.8	14.6	14.2	9.2	11.6	10.8	15.7	26.3	24.1	36.1
pH - lab	pH unit	7.1	7.1	7.3	7.1	6.96	7.02	6.99	7.1	7.46	7.07	7.21	7.13	7.27	7.17	7.23	7.32	7.39	7.15	7.22
Phenols	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.004	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.004	0.014	0.051
Phosphorus	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	17.8	9	6.9	20.4	16.3	18.9	20	18.4	20.7	14.6	14.1	12.9	7.3	10.1	8.8	17.4	18.7	21.7	23.1
Sodium	mg/L	116	59.1	43.9	131	99.2	115	126	126	134	98.5	93.6	83.1	56.2	66.2	53.8	105	116	136	149
Sulphate	mg/L	39	26	28	34	8	35	31	37	28	53	45	40	40	42	38	45	44	40	38
Total Dissolved Solids	mg/L	995	571	597	1060	804	930	1020	1040	1030	909	867	830	665	737	675	963	945	1040	1110
TSS	mg/L	48			130					24					105	32	46	42	70	45
Turbidity	NTU	173			167					100					134	119	159	80.9	140	169
Colour	TCU	13			13					12					10	9	10	12	46	27
Aluminum	mg/L	0.05	0.08	0.09	0.06	0.06	0.04	0.06	0.1	0.05	0.07	0.07	0.05	0.1	0.05	0.04	0.09	0.08	0.06	0.06
Antimony	mg/L	0.0002	< 0.0001	0.0002	0.0001	0.0001	0.0002	< 0.0001	0.0003	0.0002	0.0001	0.0002	< 0.0005	0.0002	0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0005	0.0002
Arsenic	mg/L	0.0024	0.0009	0.0011	0.005	0.004	0.0027	0.0046	0.0042	0.0021	0.0022	0.0019	0.0033	0.002	0.003	0.0012	0.0021	0.0017	0.0021	0.0011
Barium	mg/L	0.292	0.132	0.131	0.383	0.253	0.165	0.321	0.293	0.323	0.23	0.207	0.185	0.146	0.155	0.119	0.254	0.238	0.327	0.349
Beryllium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	µg/L	0.349	0.161	0.146	0.368	0.295	0.341	0.391	0.378	0.479	0.297	0.277	0.25	0.16	0.2	0.182	0.332	0.361	0.435	0.478
Cadmium	µg/L	0.00003	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00007	< 0.00002	< 0.00002	< 0.0001	0.00007	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.00002
Chromium	mg/L	0.0015	< 0.0002	< 0.0002	< 0.0002	0.0084	< 0.0002	< 0.0002	0.0277	< 0.0002	0.0003	0.0004	< 0.001	0.0007	< 0.0002	0.0002	0.0008	< 0.001	0.001	0.0009
Cobalt	mg/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	0.001	0.0021	0.0015	0.0008	0.0007	0.0003	0.0013	0.0014	0.0009	0.0011	0.0011	0.0009	0.009	0.0009	0.0005	0.0009	0.0014	0.0014	0.0012
Lead	mg/L	0.00007	0.00013	0.0002	0.00016	0.00024	0.00006	0.00013	0.00016	< 0.00002	0.00005	0.00008	< 0.0001	0.00102	0.00002	< 0.00002	0.00033	< 0.0001	< 0.0001	0.00003
Molybdenum	mg/L	0.0002	0.0004	0.0001	< 0.0001	0.0002	0.0003	< 0.0001	0.0003	0.0002	0.0002	0.0002	< 0.0005	0.0004	0.0002	0.0002	0.0001	< 0.0005	< 0.0005	0.0003
Nickel	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.003	< 0.001	< 0.001	0.003	0.003	< 0.001	0.001	0.002	< 0.001	0.001	0.001	< 0.005	0.001	0.002	< 0.001	< 0.001	< 0.005	< 0.005	0.002
Silver	mg/L	0.00002	< 0.00002	0.00032	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	0.00007	0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	0.0001
Strontium	mg/L	0.71	0.357	0.479	0.81	0.698	0.675	0.733	0.717	0.7	0.652	0.608	0.573	0.427	0.526	0.445	0.706	0.637	0.753	0.749
Thallium	mg/L	< 0.00005	0.00009	0.00008	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00019	< 0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0003	< 0.0003	< 0.00005
Vanadium	mg/L	0.0004	0.0004	0.0004	0.0111	0.0082	0.0152	0.0133	0.0097	0.0023	0.0004	0.0004	0.0007	0.0006	0.0023	0.0003	0.0008	< 0.0005	0.001	0.0008
Zinc	mg/L	0.01	0.011	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	< 0.005	0.024	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

Leachate Chamber Chemistry Summary - General Water Quality

Parameters	Units	LPC-1 21-Jan-15	LPC-1 2-Aug-16	LPC-1 29-Sep-16	LPC-1 17-Oct-16	LPC-1 21-Nov-16	LPC-1 21-Dec-16	LPC-1 23-Jan-17	LPC-1 23-Feb-17	LPC-1 29-Mar-17	LPC-1 24-Apr-17	LPC-1 25-May-17	LPC-1 20-Jul-17	LPC-1 24-Aug-17	LPC-1 21-Sep-17	LPC-1 17-Oct-17	LPC-1 13-Nov-17	LPC-1 7-Dec-17	LPC-1 15-Jan-18	LPC-1 15-Feb-18
Alkalinity	mg/L	667	750	771	731	734	694	422	393	573	617	657	645	666	725	656	624	632	556	659
Unionized Ammonia	mg/L				0.04							0.03				0.02				
Ammonia	mg/L	15.7	22	39.5	26	35.4	22.8	5.72	4.38	12.3	14.3	16.6	15.9	17.9	22.4	18.6	16.2	15.6	12.8	18.3
BOD	mg/L	7	4	6	10	7	4	5	< 3	12	2	8	8	6	8	4	4	9	5	< 3
Calcium	mg/L	195	183	159	172	149	172	166	131	176	170	188	156	190	183	180	175	184	329	193
COD	mg/L	56	82	86	114	89	76	34	23	42	89	61	53	67	75	61	71	70	83	77
Chloride	mg/L	150	206	229	231	223	221	78.6	76.4	128	126	116	121	155	176	114	144	141	118	142
Conductivity	µs/cm	1720	2070	2230	2160	2160	2060	1290	1050	1540	1630	1720	1720	1840	2040	1880	1760	1730	1490	1790
Cyanide	mg/L	< 0.005			< 0.005							< 0.005				< 5				
DOC	mg/L	16	12.7	12.7	11.4	11.9	11.8	9.8	9.4	13.6	10.9	12	12	12.2	16.1	11.8	13.2	12.7	13	10.6
Fluoride	mg/L	0.2	0.2	0.3	0.1	0.2	0.2	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	628	653	591	628	560	620	487	402	572	539	604	553	638	646	605	580	601	985	616
Iron	mg/L	20.8	9.7	6.27	11.3	6.59	7.42	10.3	7.14	12.2	12.5	37.1	16.5	110	7.76	11	0.42	20.8	123	118
Magnesium	mg/L	34.5	47.4	47.1	48.2	45.3	46.2	17.7	14.8	27.5	27.5	32.5	28.2	35.2	45.9	37.7	34.7	34.3	39.6	32.4
Manganese	mg/L	0.655	0.382	0.278	0.255	0.263	0.279	0.331	0.18	0.423	0.446	0.51	0.458	0.544	0.408	0.459	0.426	0.476	1.63	0.532
Mercury	mg/L	< 0.00002	< 0.00002	< 0.00002	< 0.02	< 0.02	< 0.02	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.02	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	mg/L	0.2	0.2	0.1	0.2	0.2	0.2	0.5	0.5	0.2	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	0.21	0.05	0.11	0.14	0.07
Nitrite	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	17.1	28.5	39.5	28.8	38.4	28.5	7.8	5.8	14.3	17.1	16.7	19.8	21.9	26.4	30.1	20.6	20.1	14.4	21.7
pH - lab	pH unit	7.1	7.2	7.32	7.56	7.47	7.01	7.09	6.93	7.33	7.14	7.37	7.05	6.95	7.1	7.12	7.5	7.15	7.59	7.34
Phenols	mg/L	< 0.001	0.004	0.07	0.01	< 0.001	< 0.001	< 0.001	< 0.001	0.009	< 0.001	0.007	0.018	0.012	0.016	0.016	0.003	< 0.001	0.005	< 0.001
Phosphorus	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.01	0.83
Potassium	mg/L	17.8	26.5	25.8	26.9	23.9	25.4	8.6	6.3	13.7	13.1	16.9	15.3	18.9	27.5	21.9	20.2	20.3	19	17.1
Sodium	mg/L	116	165	164	179	152	167	54.3	51.1	91.4	87.2	108	93.8	116	162	138	128	125	136	115
Sulphate	mg/L	39	38	39	39	43	32	146	52	60	62	46	34	35	32	34	34	32	54	34
Total Dissolved Solids	mg/L	995	1130	1190	1180	1130	1120	738	582	873	888	961	852	1083	1098	956	932	957	1170	1071
TSS	mg/L	48			28							98				26				
Turbidity	NTU	173			101							164				84				
Colour	TCU	13			24							5				16				
Aluminum	mg/L	0.05	0.08	0.05	0.09	0.11	0.06	0.06	0.04	0.09		0.09	0.05	0.1	0.1	0.1	0.09	0.21	47.9	0.74
Antimony	mg/L	0.0002	< 0.0005	< 0.0005	< 0.0005	0.0001	< 0.0005	< 0.0005	0.0001	< 0.0001	< 0.0001	0.0001	0.0002	0.0004	< 0.0001	< 0.0005	< 0.0001	0.0001	0.0063	< 0.0005
Arsenic	mg/L	0.0024	0.0022	0.0008	0.0048	0.002	0.0018	0.0032	0.0011	0.0013	0.0016	0.003	0.0029	0.0049	0.0022	0.002	0.0013	0.003	0.0123	0.008
Barium	mg/L	0.292	0.362	0.377	0.411	0.338	0.385	0.128	0.124	0.215	0.182	0.258	0.201	0.536	0.339	0.336	0.246	0.306	0.138	0.605
Beryllium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.002	< 0.002
Boron	µg/L	0.349	0.534	0.556	0.56	0.503	0.533	0.117	0.129	0.269	0.264	0.337	0.29	0.45	0.543	0.435	0.363	0.383	0.362	0.378
Cadmium	µg/L	0.00003	< 0.0001	< 0.0001	< 0.0001	< 0.00002	< 0.0001	< 0.0001	0.00006	< 0.00002	< 0.000014	< 0.000014	0.00002	0.000101	< 0.000014	< 0.00007	< 0.000014	0.000014	0.000197	< 0.00007
Chromium	mg/L	0.0015	0.001	< 0.001	0.001	0.0007	< 0.001	< 0.001	0.0004	0.0111	0.008	0.002	< 0.001	0.006	< 0.001	< 0.001	0.001	0.026	2.21	0.358
Cobalt	mg/L	< 0.005	< 0.005	< 0.005	< 0.005	0.0009	0.0011	0.0008	0.0006	< 0.0001	0.0006	< 0.005	0.0013	0.0019	< 0.005	0.005	< 0.005	< 0.005	0.038	0.0013
Copper	mg/L	0.001	0.002	< 0.0005	< 0.0005	0.0008	0.0007	0.0018	0.0035	0.0013	0.0008	0.0015	0.0018	0.005	0.0008	0.0087	0.0009	0.0022	0.0037	0.0039
Lead	mg/L	0.00007	0.0002	< 0.0001	< 0.0001	0.00032	< 0.0001	0.0001	0.00071	0.00007	< 0.00002	0.00064	0.00135	0.00307	< 0.00002	0.0004	0.00004	0.00066	0.00095	0.0019
Molybdenum	mg/L	0.0002	< 0.0005	< 0.0005	< 0.0005	0.0002	< 0.0005	< 0.0005	0.0004	0.0003	0.0002	0.0002	0.0003	0.0005	0.0002	< 0.0005	0.0002	0.0002	0.0009	0.0007
Nickel	mg/L	< 0.01	0.01	0.01	0.01	0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	0.01	0.01	1.95	0.01
Selenium	mg/L	0.003	0.007	< 0.005	0.011	0.004	< 0.005	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.005	< 0.001	< 0.001	< 0.001	< 0.005
Silver	mg/L	0.00002	< 0.0001	< 0.0001	< 0.0001	0.00006	< 0.0001	< 0.0001	0.00005	< 0.00002	0.00022	< 0.00002	0.00005	0.00002	< 0.00002	< 0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.0001
Strontium	mg/L	0.71	0.729	0.722	0.764	0.627	0.713	0.469	0.413	0.546	0.551	0.657	0.589	0.746	0.785	0.588	0.647	0.675	0.953	0.722
Thallium	mg/L	< 0.00005	< 0.0003	< 0.0003	< 0.0003	< 0.00005	< 0.0003	< 0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.0003
Vanadium	mg/L	0.0004	0.001	< 0.0005	0.0008	0.0007	0.0011	< 0.0005	0.0003	0.0005	0.0004	0.0004	0.0015	0.0029	0.0054	< 0.0005	0.0013	0.003	< 0.0001	0.0121
Zinc	mg/L	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	0.006	0.01	0.053	< 0.005	< 0.005	< 0.005	0.014	0.579	0.065

Leachate Chamber Chemistry Summary - General Water Quality

Parameters	Units	LPC-1 21-Jan-15	LPC-1 14-Mar-18	LPC-1 25-Apr-18	LPC-1 8-May-18	LPC-1 4-Jun-18	LPC-1 25-Jul-18	LPC-1 22-Aug-18	LPC-1 24-Sep-18	LPC-1 9-Oct-18	LPC-1 10-Oct-18	LPC-1 6-Nov-18	LPC-1 19-Dec-18	LPC-1 29-Jan-19	LPC-1 14-Feb-19	LPC-1 11-Mar-19	LPC-1 9-May-19	LPC-1 15-May-19	LPC-1 11-Jun-19	LPC-1 15-Jul-19
Alkalinity	mg/L	667	619	569	590	618	203	734	660	1160	598	580	591	609	599	601	482	528	531	693
Unionized Ammonia	mg/L				0.01		0.22			0.13	0.61							0.03		
Ammonia	mg/L	15.7	16.4	12.6	15	16.6	8.88	23.3	42.7	35.7	17.8	12.7	15	17.6	17.6	16.9	14.1	9.71	10.5	20.9
BOD	mg/L	7	6	< 3	5	5	14	65	> 21	39	8	10	17	< 3	19	8	7	4	3	5
Calcium	mg/L	195	177	557	190	182	69.2	252	180	221	176	176	164	179	175	160	211	184	154	184
COD	mg/L	56	56	400	38	89	29	1100	399	120	63	59	97	73	62	63	56	40	38	76
Chloride	mg/L	150	136	111	137	156	186	230	238	159	217	166	151	176	199	198	127	107	106	138
Conductivity	µs/cm	1720	1670	1430	1540	1630	1140	1990	2050	2520	1890	1670	1690	1750	1780	1790	1590	1370	1350	1860
Cyanide	mg/L	< 0.005			< 0.005		< 0.005			< 0.005	< 0.005							< 0.005		
DOC	mg/L	16	13.4	30.7	18.6	13.8	6.7	27.1	16.9	8.6	14.1	10.4	29	13.1	13.4	13.5	12.9	14.8	12.1	16.1
Fluoride	mg/L	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.5	< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	628	574	1530	602	595	224	800	639	898	599	572	534	593	596	544	653	557	475	628
Iron	mg/L	20.8	25.8	1730	49.1	52.4	0.088	314	218	103	8.32	13.1	20	27.7	11	5.64	21	20.9	10.8	45.5
Magnesium	mg/L	34.5	31.9	32.5	30.9	34	12.4	41.4	46	84.1	38.8	32.2	30.1	35.3	38.6	35.1	30.6	23.6	21.9	40.9
Manganese	mg/L	0.655	0.47	1.75	0.526	0.481	0.059	0.579	0.3	0.46	0.337	0.426	0.447	0.45	0.363	0.355	0.618	0.439	0.35	0.447
Mercury	mg/L	< 0.00002	< 0.00002	0.00028	< 0.00002	< 0.00002	< 0.00002	0.00041	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	mg/L	0.2	0.12	0.13	0.14	0.15	0.2	< 0.05	< 0.05	< 0.05	< 0.05	0.37	0.09	0.08	0.15	0.18	0.16	0.42	0.32	< 0.05
Nitrite	mg/L	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	0.13	< 0.05	0.13	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	17.1	19.6	20.9	16.3	21.8	10.4	34.6	53.7	40.1	20.1	15.9	17.2	19.7	20.5	20.8	17.6	10.9	10.5	25.2
pH - lab	pH unit	7.1	7.46	7.39	7.58	7.33	7.89	7.49	7.4	7.41	7.45	7.3	7.37	7.34	7.68	7.6	7.34	7.13	7.35	6.95
Phenols	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.023	0.141	0.016	0.012	0.003	0.017	0.012	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	< 0.1	0.11	3.65	0.04	0.42	0.14	14.2	1.15	0.99	0.06	0.07	0.05	0.05	0.03	0.03	0.1	0.05	0.02	< 0.1
Potassium	mg/L	17.8	17	14.6	16.3	19.7	11.1	24.3	34.3	33	22.5	15.4	15.2	18.1	21.3	19.1	14.5	11.7	10.8	24
Sodium	mg/L	116	114	84.3	101	119	126	148	189	162	156	110	104	121	136	123	97.6	81.6	73	136
Sulphate	mg/L	39	51	43	43	42	70	40	21	10	28	49	39	45	42	48	139	38	34	33
Total Dissolved Solids	mg/L	995	945	778	941	998	608	1521	1379	1518	1029	926	898	991	1005	972	928	796	743	1045
TSS	mg/L	48			60		4			15000	350							98		
Turbidity	NTU	173			323		2.9			9530	48.9							206		
Colour	TCU	13			9		18			33	13							9		
Aluminum	mg/L	0.05	0.79	9.91	0.23	0.2	0.36	4.1	1.7	0.1	0.08	0.12	0.12	0.27	0.12	0.12	0.68	0.1	0.08	0.15
Antimony	mg/L	0.0002	< 0.0005	0.0008	< 0.0001	< 0.0005	< 0.0005	0.0007	0.0005	< 0.0005	< 0.0005	< 0.0005	0.0001	< 0.0005	< 0.0001	< 0.0005	0.0006	< 0.0005	< 0.0005	< 0.0005
Arsenic	mg/L	0.0024	0.0031	0.0305	0.0007	0.0038	< 0.0005	0.0171	0.0157	0.0068	0.0013	0.0015	0.002	0.0024	0.0013	0.0008	0.0013	0.0013	0.0009	0.0026
Barium	mg/L	0.292	0.258	5.76	0.319	0.343	0.044	1.43	1.3	0.986	0.339	0.281	0.249	0.331	0.297	0.253	0.245	0.211	0.159	0.394
Beryllium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.2	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	µg/L	0.349	0.339	1.24	0.325	0.408	0.136	0.754	1.3	1.11	0.416	0.293	0.339	0.382	0.426	0.37	0.299	0.281	0.278	0.509
Cadmium	µg/L	0.00003	< 0.00007	0.00073	< 0.000015	< 0.00007	< 0.00007	0.000332	0.000166	< 0.00007	< 0.00007	< 0.00007	0.000028	< 0.00007	< 0.000015	< 0.00007	< 0.00007	< 0.00007	< 0.00007	< 0.00007
Chromium	mg/L	0.0015	0.1	0.372	0.007	0.005	0.001	0.032	0.1	0.005	0.002	0.009	0.006	0.017	0.011	0.012	0.161	0.004	0.001	0.013
Cobalt	mg/L	< 0.005	0.0008	0.0192	0.0002	0.0013	< 0.0005	0.0105	0.0082	0.0032	< 0.005	0.001	0.0013	0.0013	0.007	0.0013	0.0025	0.0009	0.0011	0.0015
Copper	mg/L	0.001	< 0.0005	0.0543	0.0008	0.0092	0.0007	0.0206	0.015	0.0133	< 0.0005	0.0072	0.0021	0.0042	0.0011	0.0011	0.0062	0.001	0.0015	0.0021
Lead	mg/L	0.00007	0.0001	0.0512	0.00021	0.0015	0.00024	0.0143	0.0073	0.0011	0.0001	0.0003	0.00034	0.0025	0.00012	0.0002	0.0016	0.0004	0.0001	0.0005
Molybdenum	mg/L	0.0002	< 0.0005	0.002	< 0.0001	< 0.0005	0.0018	0.001	0.0009	< 0.0005	< 0.0005	< 0.0005	0.0002	< 0.0005	0.0002	< 0.0005	0.0022	< 0.0005	< 0.0005	< 0.0005
Nickel	mg/L	< 0.01	0.03	0.05	< 0.01	< 0.01	< 0.01	0.02	< 1	0.02	0.01	< 0.01	< 0.01	0.01	0.01	0.01	0.07	< 0.01	< 0.01	0.01
Selenium	mg/L	0.003	< 0.005	< 0.005	< 0.001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.001	< 0.005	< 0.001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Silver	mg/L	0.00002	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	0.71	0.639	1.59	0.655	0.672	0.255	0.982	1	0.952	0.641	0.65	0.591	0.64	0.715	0.622	0.678	0.572	0.515	0.774
Thallium	mg/L	< 0.00005	< 0.0003	< 0.0003	< 0.00005	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.00005	< 0.0003	< 0.00005	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Vanadium	mg/L	0.0004	0.0015	0.0475	0.0003	0.0019	< 0.0005	0.0178	0.0193	0.0032	0.0008	0.001	0.0013	0.0018	0.0009	0.0008	0.0025	0.0009	0.0005	0.0018
Zinc	mg/L	0.01	0.019	0.283	0.045	0.02	0.024	0.103	< 0.5	0.024	0.012	0.018	0.019	0.023	0.009	0.03	0.035	0.009	< 0.005	0.006

Leachate Chamber Chemistry Summary - General Water Quality

Parameters	Units	LPC-1 21-Jan-15	LPC-1 14-Aug-19	LPC-1 30-Sep-19	LPC-1 9-Oct-19	LPC-1 12-Nov-19	LPC-1 18-Dec-19	LPC-1 21-Jan-20	LPC-1 5-Feb-20	LPC-1 18-Mar-20	LPC-1 30-Apr-20	LPC-1 11-May-20	LPC-1 24-Jun-20	LPC-1 13-Jul-20	LPC-1 11-Aug-20	LPC-1 9-Sep-20	LPC-1 13-Oct-20	LPC-1 25-Nov-20	LPC-1 16-Dec-20	LPC-1 18-Jan-21
Alkalinity	mg/L	667	773	759	731	610	543	579	560	529	603	626	697	710	719	688	700	556	585	578
Unionized Ammonia	mg/L				0.45							0.01					0.24			
Ammonia	mg/L	15.7	26.6	28.4	27.9	17.4	11.8	13.6	12.8	10.6	16.6	16.2	21.2	25.4	29.6	21.6	26.8	14.7	12.2	14.2
BOD	mg/L	7	4		< 3	5	5	5	5	< 3	4	3	5	5	7	6	< 30	< 10	< 3	6
Calcium	mg/L	195	186	180	182	184	185	192	196	182	179	188	194	202	192	183	177	175	183	192
COD	mg/L	56	78	112	87	59	50	44	51	35	73	54	63	80	88	63	78	47	38	42
Chloride	mg/L	150	202	307	278	201	146	135	162	116	136	142	185	215	241	199	229	185	141	155
Conductivity	µs/cm	1720	2000	2160	2110	1750	1540	1590	1590	1430	1600	1650	1840	2010	2080	1870	2010	1700	1560	1640
Cyanide	mg/L	< 0.005			< 0.005							< 0.005					< 0.005			
DOC	mg/L	16	18.5	1.3	11.4	10	8.2	11.1	12.9	10.9	10.6	12.4	11.6	15.8	17.5	12.5	19.6	9.5	12	13.7
Fluoride	mg/L	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	628	649	664	666	610	580	609	616	556	574	602	654	694	684	620	596	571	568	612
Iron	mg/L	20.8	14.4	15.1	11.8	13.9	13	33.6	26	21.3	15.3	14.8	16.4	15.3	14.1	15.8	0.036	7.47	26.3	19.4
Magnesium	mg/L	34.5	44.8	52	51.3	36.6	28.5	31.4	30.7	24.5	30.9	32.1	41.2	45.9	49.6	39.5	47	32.5	27	32.2
Manganese	mg/L	0.655	0.379	0.299	0.272	0.404	0.416	0.487	0.44	0.424	0.431	0.463	0.408	0.361	0.29	0.322	0.247	0.416	0.598	0.517
Mercury	mg/L	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00013	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	mg/L	0.2	< 0.05	< 0.05	< 0.05	0.21	0.49	0.11	0.18	0.36	0.16	0.15	0.09	0.91	0.99	0.18	0.16	0.09	0.06	0.27
Nitrite	mg/L	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	17.1	30.7	35.8	35.3	18	14.9	15.8	15.8	13.2	18	19.1	27.8	33.3	38.2	25.1	32.7	19.6	14.7	18
pH - lab	pH unit	7.1	7.4	7.28	7.66	7.6	7.37	7.27	7.6	7.29	8	7.53	7.31	7.36	7.5	7.34	7.65	7.36	7.5	7.29
Phenols	mg/L	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	< 0.1	0.03	0.03	0.06	0.02	0.04	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	17.8	27.4	28.9	31.5	19	12.8	14.6	15.2	11.8	16.3	16.9	22.4	27.5	31.5	22.7	32.2	17.1	12.6	16.3
Sodium	mg/L	116	149	168	179	124	91.6	95.8	100	75.4	99.5	107	137	155	161	138	151	121	91.8	112
Sulphate	mg/L	39	22	15	17	49	50	46	44	42	45	39	34	29	19	21	19	34	36	34
Total Dissolved Solids	mg/L	995	1144	1258	1226	1017	868	896	927	791	906	936	1076	1148	1178	1059	1110	925	885	927
TSS	mg/L	48			30							25					48			
Turbidity	NTU	173			97							115					146			
Colour	TCU	13			18							12					17			
Aluminum	mg/L	0.05	0.1	0.07	0.1	0.11	0.11	0.18	0.06	0.09	0.09	0.08	0.02	0.09	0.11	0.1	0.09	0.09	0.09	0.1
Antimony	mg/L	0.0002	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0012	< 0.0005	< 0.0005	< 0.0005	0.0001	< 0.0005	< 0.0005	< 0.0005
Arsenic	mg/L	0.0024	0.0012	0.0014	0.0013	0.0015	0.0012	0.0022	0.0016	0.0014	0.0012	0.001	0.0055	0.0012	0.0014	0.001	0.0018	0.0011	0.0018	0.0013
Barium	mg/L	0.292	0.382	0.471	0.462	0.313	0.226	0.299	0.27	0.213	0.23	0.255	0.353	0.427	0.489	0.396	0.361	0.271	0.285	0.286
Beryllium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	µg/L	0.349	0.54	0.632	0.605	0.411	0.3	0.336	0.327	0.258	0.334	0.324	0.519	0.559	0.668	0.484	0.554	0.344	0.281	0.336
Cadmium	µg/L	0.00003	< 0.00007	< 0.00007	< 0.00007	< 0.00007	< 0.00007	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.00010	< 0.000015	< 0.000070	< 0.000070	< 0.000070
Chromium	mg/L	0.0015	< 0.001	0.004	0.003	0.01	0.004	0.023	0.048	0.001	0.004	0.001	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.003
Cobalt	mg/L	< 0.005	0.001	0.0011	0.0013	0.001	0.0008	0.0008	0.0009	0.001	0.0009	0.0008	0.0046	0.0012	0.0012	0.0013	< 0.005	0.001	0.0009	0.0008
Copper	mg/L	0.001	< 0.0005	< 0.0005	< 0.0005	0.0006	0.0011	0.0021	0.0006	0.0036	< 0.0005	< 0.0005	0.0022	0.0006	0.0015	< 0.0005	0.0003	< 0.0005	0.0007	< 0.0005
Lead	mg/L	0.00007	< 0.0001	< 0.0001	0.0002	0.0005	0.0002	0.0005	0.0004	0.0002	< 0.0001	< 0.0001	0.0006	0.0001	0.0003	0.0002	0.00018	0.0001	0.0002	0.0002
Molybdenum	mg/L	0.0002	< 0.0005	< 0.0005	< 0.0005	0.0007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0009	< 0.0005	< 0.0005	< 0.0005	0.0002	< 0.0005	< 0.0005	< 0.0005
Nickel	mg/L	< 0.01	< 0.01	0.01	0.01	0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	0.01	0.01	< 0.01	0.01	0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.003	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.001	0.002	< 0.005	< 0.005	< 0.005
Silver	mg/L	0.00002	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	0.71	0.732	0.794	0.828	0.679	0.6	0.664	0.641	0.54	0.6	0.644	0.73	0.734	0.78	0.695	0.717	0.637	0.618	0.679
Thallium	mg/L	< 0.00005	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0001	< 0.005	< 0.0003	< 0.0003	< 0.0003
Vanadium	mg/L	0.0004	0.0007	0.001	0.001	0.001	0.0007	0.0015	0.0007	0.0008	0.0006	0.0006	0.0036	0.0008	0.0011	0.0011	0.0014	< 0.0005	0.0009	0.0006
Zinc	mg/L	0.01	< 0.005	0.005	< 0.005	0.018	< 0.005	0.006	0.006	0.007	< 0.005	< 0.005	0.013	< 0.005	0.016	0.011	< 0.005	0.008	0.006	< 0.005

Leachate Chamber Chemistry Summary - General Water Quality

Parameters	Units	LPC-1 21-Jan-15	LPC-1 3-Mar-21	LPC-1 29-Mar-21	LPC-1 4-May-21	LPC-1 31-May-21	LPC-1 22-Jun-21	LPC-1 26-Jul-21	LPC-1 16-Aug-21	LPC-1 28-Sep-21	LPC-1 13-Oct-21	LPC-1 29-Nov-21	LPC-1 13-Dec-21	LPC-1 25-Jan-22	LPC-1 22-Feb-22	LPC-1 21-Mar-22	LPC-1 4-May-22	LPC-1 19-May-22	LPC-1 21-Jun-22	LPC-1 27-Jul-22
Alkalinity	mg/L	667	518	420	536	621	740	646	742	644	624	563	525	657	584	477	563	662	622	749
Unionized Ammonia	mg/L					0.02					0.03							0.02		
Ammonia	mg/L	15.7	10.1	4.91	6.8	15.7	19.2	11.8	17.2	11	13.7	8.48	5.4	12.1	9.98	6.19	10.7	14	14.4	21.6
BOD	mg/L	7	< 10	3	< 3	< 3	5	4	< 3	< 3	< 3	< 3	< 3	< 3	4	< 3	< 3	< 3	5	< 3
Calcium	mg/L	195	179	185	191	204	215	191	207	203	202	197	151	180	178	170	197	182	196	187
COD	mg/L	56	25	135	33	35	51	59	48	33	39	43	19	40	35	22	35	38	37	59
Chloride	mg/L	150	147	79.6	92.2	107	124	115	134	120	140	124	80.1	150	117	103	109	130	125	143
Conductivity	µs/cm	1720	1540	1140	1330	1540	1680	1500	1630	1500	1600	1490	1220	1610	1470	1290	1477	1580	1650	1800
Cyanide	mg/L	< 0.005				< 0.005					< 0.005							< 0.005		
DOC	mg/L	16	8.8	19.3	8.8	9	9.7	7.5	11.8	10.4	9.1	6.4	4.7	6.2	6.7	4.9	7.4	9	8.4	12
Fluoride	mg/L	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	628	563	537	571	640	692	588	667	620	637	596	449	568	542	501	595	576	620	617
Iron	mg/L	20.8	8.86	319	15.5	30.9	16.7	48.3	13.8	16.6	51.1	127	7.02	19.3	14	39.2	89.6	15.3	31	9.9
Magnesium	mg/L	34.5	28.1	18.4	22.8	31.7	37.5	27	36.3	27.3	32.2	25.3	17.2	29	23.6	18.6	25	29.3	31.5	36.4
Manganese	mg/L	0.655	0.461	0.439	0.468	0.545	0.485	0.615	0.522	0.561	0.563	0.564	0.329	0.488	0.454	0.345	0.548	0.499	0.552	0.39
Mercury	mg/L	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	mg/L	0.2	0.64	0.98	0.46	< 0.05	< 0.05	0.76	< 0.05	< 0.05	0.09	< 0.05	0.12	0.63	0.14	< 0.05	0.77	0.07	< 0.05	< 0.05
Nitrite	mg/L	< 0.1	0.06	0.09	< 0.05	0.12	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.5	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tot Kjel N	mg/L	17.1	14.4	9.4	8.2	17.4	20.6	13	19.5	11.2	16	11.3	6.1	14.5	12.2	8.4	13.8	15.8	18.8	25
pH - lab	pH unit	7.1	7.35	7.53	7.68	7.43	7.58	7.34	7.47	7.38	7.63	7.82	7.46	7.69	7.26	7.28	7.45	7.77	7.38	7.48
Phenols	mg/L	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	< 0.1	< 0.1	0.3	< 0.1	0.01	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	17.8	11.5	7.5	9.5	15.6	19.8	11.4	18.9	12.4	15.5	9.9	6.8	13.9	10.2	8	11.1	13.4	15	21
Sodium	mg/L	116	98.5	59.2	70.9	82	102	75.6	94.4	82.4	94	76.5	50.6	84.5	73.2	68.7	77.1	89.6	92.3	115
Sulphate	mg/L	39	44	35	37	27	20	35	24	28	29	39	37	46	40	39	39	39	34	22
Total Dissolved Solids	mg/L	995	841	963	770	244	1004	907	996	890	956	947	673	932	820	734	900	915	917	1011
TSS	mg/L	48				80					67							34		
Turbidity	NTU	173				7					253							204		
Colour	TCU	13				899					8							8		
Aluminum	mg/L	0.05	0.08	0.55	0.1	0.11	0.11	0.12	0.08	0.11	0.12	0.7	0.05	0.08	0.1	0.08	0.18	0.06	0.09	0.11
Antimony	mg/L	0.0002	< 0.0005	< 0.0005	< 0.0001	0.0006	0.0006	< 0.0005	< 0.0005	0.0006	< 0.0005	< 0.0005	0.0005	< 0.0005	0.0006	0.0005	< 0.0005	< 0.0005	0.0006	< 0.0005
Arsenic	mg/L	0.0024	0.0005	0.0128	0.0008	0.0014	0.0009	0.0029	0.0006	0.0009	0.0024	0.0066	0.0008	0.0012	0.0011	0.0019	0.0032	0.0009	0.0016	0.0008
Barium	mg/L	0.292	0.241	1.03	0.2	0.33	0.351	0.309	0.313	0.283	0.405	0.52	0.141	0.278	0.22	0.235	0.394	0.231	0.305	0.324
Beryllium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	µg/L	0.349	0.273	0.361	0.226	0.299	0.374	0.241	0.373	0.261	0.31	0.274	0.155	0.269	0.208	0.185	0.28	0.287	0.318	0.419
Cadmium	µg/L	0.00003	< 0.000070	< 0.000070	< 0.000015	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070
Chromium	mg/L	0.0015	< 0.001	0.009	< 0.001	0.001	0.006	0.009	0.001	0.001	0.009	0.003	< 0.001	0.004	0.01	0.007	0.002	< 0.001	< 0.001	0.001
Cobalt	mg/L	< 0.005	0.0007	0.0027	< 0.005	0.001	0.0008	0.001	0.001	0.001	0.001	0.0015	0.001	0.001	0.0007	0.0009	0.0011	0.0008	0.0011	0.0007
Copper	mg/L	0.001	0.0005	0.0033	0.0006	< 0.0005	< 0.0005	0.0008	< 0.0005	< 0.0005	0.0009	0.0041	0.0106	0.0005	0.0005	0.0016	0.0026	< 0.0005	0.0007	< 0.0005
Lead	mg/L	0.00007	0.0001	0.0034	0.0001	< 0.0001	0.0002	0.0005	< 0.0001	0.0001	0.0006	0.004	< 0.0001	< 0.0001	0.0002	0.0004	0.0013	< 0.0001	0.0002	< 0.0001
Molybdenum	mg/L	0.0002	< 0.0005	0.0012	0.0001	0.0009	< 0.0005	0.0006	< 0.0005	< 0.0005	0.001	0.0006	< 0.0005	0.0016	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0005	< 0.0005
Nickel	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.003	< 0.005	< 0.005	< 0.001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Silver	mg/L	0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	0.71	0.657	0.623	0.62	0.709	0.78	0.687	0.752	0.675	0.744	0.67	0.458	0.632	0.554	0.5	0.651	0.615	0.698	0.7
Thallium	mg/L	< 0.00005	< 0.0003	< 0.0003	< 0.00005	< 0.005	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Vanadium	mg/L	0.0004	< 0.0005	0.0067	0.0004	0.0008	0.0006	0.0022	< 0.0005	< 0.0005	0.0017	0.0045	< 0.0005	0.0007	0.0007	0.0014	0.0021	0.0006	0.001	< 0.0005
Zinc	mg/L	0.01	0.013	0.107	0.005	0.014	0.011	0.006	0.015	0.013	0.022	0.01	0.031	< 0.005	0.036	0.01	0.014	< 0.005	< 0.005	0.006

Leachate Chamber Chemistry Summary - General Water Quality

Parameters	Units	LPC-1 21-Jan-15	LPC-1 24-Aug-22	LPC-1 13-Sep-22	LPC-1 26-Oct-22	LPC-1 17-Nov-22	LPC-1 7-Dec-22	LPC-1 18-Jan-23	LPC-1 10-Feb-23	LPC-1 1-Mar-23	LPC-1 24-Apr-23	LPC-1 25-May-23	LPC-1 14-Jun-23	LPC-1 6-Jul-23	LPC-1 15-Aug-23	LPC-1 18-Sep-23	LPC-1 18-Oct-23	LPC-1 2-Nov-23	LPC-1 18-Dec-23	LPC-1 25-Jan-24
Alkalinity	mg/L	667	754	793	802	770	632	632	443	617	598	682	673	751	702	801	715	685	663	655
Unionized Ammonia	mg/L				0.07	0.45						0.23					0.05			
Ammonia	mg/L	15.7	24.2	26	31.3	29.3	16.5	13.9	4.9	13.5	11.9	14.9	16.3	20.2	20.3	28.3	23.8	22.3	16.6	17.9
BOD	mg/L	7	7	4	6	5	7	6	5	7	10	8	8	3	4	12	6	6	4	4
Calcium	mg/L	195	173	175	171	161	191	211	165	212	183	178	187	191	191	171	162	172	192	180
COD	mg/L	56	74	77	80	82	52	43	51	51	29	55	69	70	67	110	28	66	48	44
Chloride	mg/L	150	176	188	177	178	154	140	85.8	148	98.5	127	137	146	158	238	160	166	183	152
Conductivity	µs/cm	1720	1960	1940	2020	1990	1710	1610	1150	1640	1510	1630	1700	1780	1780	1960	1790	1780	1780	1680
Cyanide	mg/L	< 0.005			< 0.005	< 0.005						< 0.005					<0.005			
DOC	mg/L	16	13.3	4.8	8.6	10.4	6.9	6.4	12.6	6.4	6.4	6	6.3	49.7	7.8	7.1	15.5	12.2	23.4	17.3
Fluoride	mg/L	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	< 0.1	< 1	< 1	< 1	<0.7	<0.7	<0.7	<0.1	<0.1	<0.1
Hardness	mg/L	628	603	619	617	569	621	660	492	700	564	571	605	622	600	600	500	600	600	600
Iron	mg/L	20.8	15	13	6.87	5.83	11.2	33.9	88.1	19.2	16.2	15.9	16.5	5.08	23.3	20.7	12.6	0.024	16.7	11.7
Magnesium	mg/L	34.5	41.3	43.9	46.2	40.5	35	32	17.2	30.9	26.1	30.9	33.5	35.1	34.9	42.6	33.6	32.8	36.2	29.5
Manganese	mg/L	0.655	0.292	0.269	0.312	0.331	0.447	0.493	0.284	0.517	0.455	0.455	0.442	0.437	0.491	0.351	0.385	0.42	0.53	0.474
Mercury	mg/L	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00002
Nitrate	mg/L	0.2	0.05	< 0.05	0.12	0.16	0.25	0.07	0.81	0.09	0.08	< 0.5	< 0.5	< 0.5	<0.40	<0.40	<0.40	<0.05	0.14	<0.05
Nitrite	mg/L	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	< 0.05	< 0.5	< 0.5	< 0.5	<0.40	<0.40	<0.40	<0.05	<0.05	<0.05
Tot Kjel N	mg/L	17.1	40.4	33.9	35.1	32.3	19.3	14.7	6.7	16.4	14.9	17.2	19.5	21.4	24	34.5	26.4	29.3	19.8	18.7
pH - lab	pH unit	7.1	7.31	7.73	7.54	7.44	7.37	7.54	7.64	7.11	7.22	7.45	6.81	7.35	7.11	7.54	7.49	7.59	7.34	7.52
Phenols	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	<0.01	< 0.1	< 0.1	< 0.1	< 0.1	0.04	0.07	0.09	0.02	0.04	0.03
Potassium	mg/L	17.8	24.6	27.3	29.6	25.1	16.2	14.7	6.8	14.4	12.5	15.5	17.9	20.3	20.9	27.5	21.3	20.8	20	16.4
Sodium	mg/L	116	130	144	138	126	104	97.1	56.6	92.6	79.5	93.4	101	107	112	131	104	106	125	102
Sulphate	mg/L	39	17	16	29	21	68	48	43	39	35	40	42	18	23	14	42	25	36	37
Total Dissolved Solids	mg/L	995	1061	1083	1119	1057	959	974	647	899	810	929	960	973	985	1130	966	934	1010	921
TSS	mg/L	48			26	40						240					52			
Turbidity	NTU	173			93.2	189						279					1000			
Colour	TCU	13			15	16						14					14			
Aluminum	mg/L	0.05	0.08	0.07	0.1	0.09	0.27	0.25	0.86	0.118	0.05	0.06	0.06	0.07	0.1	0.19	0.09	0.09	0.06	0.06
Antimony	mg/L	0.0002	< 0.0005	0.0005	0.0005	< 0.0005	< 0.0005	0.0008	0.0006	<0.0005	< 0.0005	< 0.0005	0.0008	< 0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	mg/L	0.0024	0.001	0.001	0.0012	0.0011	0.0014	0.0021	0.0052	0.0011	0.0009	0.0008	0.0087	0.0006	0.0015	0.0017	0.0015	0.001	0.0014	0.001
Barium	mg/L	0.292	0.39	0.419	0.396	0.35	0.326	0.325	0.335	0.275	0.222	0.249	0.287	0.3	0.358	0.425	0.316	0.264	0.325	0.271
Beryllium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.001	< 0.002	< 0.002	< 0.002	< 0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	µg/L	0.349	0.516	0.573	0.604	0.516	0.36	0.336	0.262	0.309	0.266	0.303	0.385	0.392	0.412	0.581	0.389	0.402	0.422	0.331
Cadmium	µg/L	0.00003	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	0.000113	<0.005	< 0.000070	< 0.000070	< 0.000070	< 0.000070	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	mg/L	0.0015	0.002	< 0.001	0.017	0.013	0.066	0.005	0.024	0.004	0.001	0.001	< 0.001	0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt	mg/L	< 0.005	0.0011	0.0009	0.0012	< 0.005	0.0017	0.0012	0.0025	<0.005	0.0008	0.0006	0.0026	0.0009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	mg/L	0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.004	0.0016	0.0073	<0.002	< 0.0005	< 0.0005	0.0021	< 0.0005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Lead	mg/L	0.00007	0.0002	0.0001	0.0002	< 0.0001	0.001	0.0009	0.0043	<0.02	0.0002	< 0.0001	0.0014	< 0.0001	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Molybdenum	mg/L	0.0002	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0058	0.0006	0.0018	<0.01	< 0.0005	< 0.0005	0.0014	< 0.0005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel	mg/L	< 0.01	0.01	0.01	0.02	0.01	0.04	< 0.01	< 0.01	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01
Selenium	mg/L	0.003	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silver	mg/L	0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	mg/L	0.71	0.733	0.756	0.764	0.684	0.722	0.734	0.446	0.676	0.622	0.686	0.716	0.693	0.7	0.751	0.637	0.636	0.76	0.652
Thallium	mg/L	< 0.00005	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	<0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Vanadium	mg/L	0.0004	0.0011	0.0009	0.001	0.001	0.0018	0.0016	0.0049	<0.005	< 0.0005	< 0.0005	0.006	< 0.0005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.01	< 0.005	0.006	0.006	< 0.005	0.01	0.013	0.045	0.018	0.009	< 0.005	< 0.005	0.008	0.005	<0.005	0.007	<0.005	<0.005	<0.005

Leachate Chamber Chemistry Summary - General Water Quality

Parameters	Units	LPC-1 21-Jan-15	LPC-1 7-Feb-24	LPC-1 14-Mar-24	LPC-1 25-Apr-24	LPC-1 8-May-24	LPC-1 12-Jun-24	LPC-1 30-Jul-24	LPC-1 15-Aug-24	LPC-1 30-Sep-24	LPC-1 10-Oct-24	LPC-1 14-Nov-24	LPC-1 18-Dec-24	LPC-2 29-May-15	LPC-2 13-Jul-15	LPC-2 20-Oct-15	LPC-2 21-Apr-16	LPC-2 14-Jul-16	LPC-2 17-Oct-16	LPC-2 24-Apr-17
Alkalinity	mg/L	667	625	625	1050	629	661	672	1140	710	680	765	602	2190	2410	2770	1930	2850	2140	1300
Unionized Ammonia	mg/L					0.03			0.38		0.09						4.25	1.1	2.43	
Ammonia	mg/L	15.7	17.6	17.6	80.9	7.5	19.7	23	63.2	22.9	24.2	27.5	14.5	207	236	326	168	369	212	99.4
BOD	mg/L	7	8	8	<3	5	6	8	12	8	4	4	6	28	284	72	11	49	22	19
Calcium	mg/L	195	190	190	284	173	188	176	375	240	178	179	205	201	258	170	245	171	162	183
COD	mg/L	56	191	191	389	124	64	59	4140	191	82	83	54	417	795	503	362	593	445	201
Chloride	mg/L	150	164	164	304	138	159	151	155	179	175	237	198	773	129	1010	513	981	842	314
Conductivity	µs/cm	1720	1630	1630	2990	1660	1770	1800	2530	1830	1900	2000	1740	6260	6170	8150	5020	7910	6570	3370
Cyanide	mg/L	< 0.005				<0.005			0.01		<0.005			< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	
DOC	mg/L	16	43.9	43.9	45.6	10.2	11.7	21.9	42.6	41.7	16.4	10.7	5.9	36.3	87.9	98.6	52.7	186	21.2	22.2
Fluoride	mg/L	0.2	<0.1	<0.1	<0.7	<0.1	<0.7	<0.7	<0.1	<0.1	<0.1	<0.7	<0.1	0.2	< 0.1	0.6	0.2	< 3	<1	< 0.1
Hardness	mg/L	628	600	600	900	500	611	585	1280	752	611	632	667	950	1040	972	975	913	827	660
Iron	mg/L	20.8	103	103	158	6.37	30.7	14.5	1790	215	19.7	13.2	13.8	8.96	11.5	5.33	12.6	14	6.78	8.93
Magnesium	mg/L	34.5	28.6	28.6	45.7	27.4	34.4	35.6	82.5	36.8	40.1	45.1	37.5	109	97	133	88.1	119	103	49.1
Manganese	mg/L	0.655	0.545	0.545	1.23	0.385	0.455	0.461	1.25	0.65	0.388	0.345	0.47	0.309	0.613	0.217	0.595	0.292	0.267	0.421
Mercury	mg/L	< 0.00002	<0.00002	<0.00002	0.00007	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	mg/L	0.2	0.07	0.07	1.87	<0.05	<0.40	<0.40	0.22	<0.05	<0.05	<0.40	0.09	1	< 0.1	1.3	0.3	2.8	6.7	2.3
Nitrite	mg/L	< 0.1	<0.05	<0.05	<0.40	<0.05	<0.40	<0.40	<0.05	<0.05	<0.05	<0.40	<0.05	< 0.1	< 0.1	2.9	< 0.1	< 3	2.8	0.7
Tot Kjel N	mg/L	17.1	21	21	97.1	8.8	21.7	26.5	158	27.4	29.1	33.3	17.5	232	251	3730	200	369	270	111
pH - lab	pH unit	7.1	7.29	7.29	7.88	7.38	7.04	6.84	7.31	7.38	7.8	7.49	7.13	7.58	7.49	7.87	7.66	7.74	7.85	7.5
Phenols	mg/L	< 0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	0.01	0.104	0.004	< 0.001	0.201	0.007	0.018
Phosphorus	mg/L	< 0.1	0.33	0.33	5.67	0.04	0.02	0.08	166	0.69	0.18	0.11	0.02	0.7	0.9	0.9	0.5	1.3	0.7	0.3
Potassium	mg/L	17.8	14.9	14.9	98.9	13.7	19	20	41.1	21.6	22.6	26.4	16.9	233	205	298	184	276	247	103
Sodium	mg/L	116	98.7	98.7	252	90.1	116	118	141	114	131	146	138	708	636	807	523	834	705	279
Sulphate	mg/L	39	34	34	100	38	30	22	7	26	25	29	50	118	5	148	81	49	174	70
Total Dissolved Solids	mg/L	995	964	964	1880	875	975	971	1490	1070	1000	1130	1040	3730	2790	4670	3030	4640	3830	1930
TSS	mg/L	48				1200			18200		500			70	60	680	360	100	68	
Turbidity	NTU	173				991			10600		920			105	20	228	154	114	55.7	
Colour	TCU	13				8			23		13			330	780	394	453	510	280	1250
Aluminum	mg/L	0.05	0.22	0.22	1.88	0.12	0.1	0.3	2.43	2.42	0.16	0.07	0.12	0.1	0.1	0.12	0.14	0.12	0.11	
Antimony	mg/L	0.0002	<0.0005	<0.0005	0.0101	<0.0005	0.0005	<0.0005	0.0022	0.0008	<0.0005	<0.0005	<0.0005	0.0015	0.0022	0.0032	0.001	0.0017	0.002	0.0014
Arsenic	mg/L	0.0024	0.0064	0.0064	0.0431	0.0008	0.0014	0.0011	0.324	0.0147	0.0018	0.0021	0.0009	0.0179	0.0412	0.025	< 0.005	0.0213	0.0195	0.0065
Barium	mg/L	0.292	0.604	0.604	1.87	0.333	0.363	0.3	13.9	0.925	0.364	0.419	0.346	0.455	0.443	0.521	0.418	0.591	0.444	0.261
Beryllium	mg/L	< 0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	µg/L	0.349	0.359	0.359	3	0.276	0.391	0.415	2.05	0.549	0.461	0.536	0.368	8.33	7.01	11.7	6.45	10.4	9.02	3.53
Cadmium	µg/L	0.00003	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.043	<0.005	<0.005	<0.005	<0.005	0.00005	0.00005	0.00008	0.00004	0.00005	0.00008	0.000041
Chromium	mg/L	0.0015	0.004	0.004	0.087	0.002	0.002	<0.002	0.034	0.011	<0.002	0.002	<0.002	0.0215	< 0.0002	0.0701	0.0093	0.0177	0.0136	0.006
Cobalt	mg/L	< 0.005	<0.005	<0.005	0.027	<0.005	<0.005	<0.005	0.096	<0.005	<0.005	<0.005	<0.005	0.012	0.009	0.014	0.01	0.011	0.0123	0.0048
Copper	mg/L	0.001	<0.002	<0.002	0.085	<0.002	<0.002	<0.002	0.166	0.01	<0.002	<0.002	<0.002	0.0066	0.0039	0.0079	0.0051	0.0077	0.0116	0.0061
Lead	mg/L	0.00007	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.34	0.02	<0.02	<0.02	<0.02	0.00033	0.00022	0.0002	0.00024	0.00017	0.00067	0.00025
Molybdenum	mg/L	0.0002	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0019	0.001	0.0033	0.0009	0.0021	0.0036	0.0012
Nickel	mg/L	< 0.01	<0.01	<0.01	0.06	<0.01	<0.01	<0.01	0.03	0.02	<0.01	<0.01	0.01	0.07	0.05	0.09	0.05	0.07	0.09	0.02
Selenium	mg/L	0.003	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	0.002	0.003	< 0.001	< 0.005	0.009	0.022	< 0.001
Silver	mg/L	0.00002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00072	0.00007	0.00017	0.00005	0.00122	0.00016	0.00029
Strontium	mg/L	0.71	0.689	0.689	1.83	0.628	0.703	0.666	2.08	0.877	0.718	0.766	0.786	1.8	2	1.88	1.74	1.98	1.62	1.19
Thallium	mg/L	< 0.00005	<0.0003	<0.0003	0.0004	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	0.0004	<0.005	<0.005	0.056	<0.005	<0.005	<0.005	0.062	0.011	<0.005	<0.005	<0.005	0.0147	0.0506	0.0416	0.0085	0.0207	0.0127	0.0053
Zinc	mg/L	0.01	0.01	0.01	0.65	0.02	0.012	<0.005	0.629	0.066	0.008	0.012	0.005	0.006	0.03	0.06	0.018	0.024	0.052	0.071

Leachate Chamber Chemistry Summary - General Water Quality

Parameters	Units	LPC-1 21-Jan-15	LPC-2 17-Oct-17	LPC-2 25-Apr-18	LPC-2 31-Jul-18	LPC-2 10-Oct-18	LPC-2 10-May-19	LPC-2 9-Oct-19	LPC-2 30-Apr-20	LPC-2 13-Oct-20	LPC-2 4-May-21	LPC-2 13-Oct-21	LPC-2 4-May-22	LPC-2 24-Aug-22	LPC-2 26-Oct-22	LPC-2 24-Apr-23	LPC-2 18-Oct-23	LPC-2 25-Apr-24	LPC-2 10-Oct-24
Alkalinity	mg/L	667	1660	1370	660	2210	1270	2380	442	1910	1390	1840	1100	1430	1910	1380	1300	617	1620
Unionized Ammonia	mg/L		2.52			2.3	1.41	0.23	0.01	1.56	1.49	2.7	0.15	0.03	5.42	0.05	0.17	0.07	0.47
Ammonia	mg/L	15.7	141	92.6	19.3	220	10	350	0.31	250	112	289	124	36.7	278	110	229	13.8	244
BOD	mg/L	7	16		9	320	262	62	4	80	198	44	20	7	25	17	15	0	18
Calcium	mg/L	195	217	282	234	311	273	267	83.3	239	252	231	228	486	176	203	149	187	210
COD	mg/L	56	348	744	58	780	644	692	104	548	620	602	232	1490	419	251	396	45	394
Chloride	mg/L	150	300	280	191	617	27.5	887	274	705	431	881	413	156	786	443	630	135	596
Conductivity	µs/cm	1720	4200	3540	1890	5990	3490	7050	2010	5620	4130	6090	4060	3000	6140	3990	5350	1570	4910
Cyanide	mg/L	< 0.005	< 5			0.01	0.01	0.009	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005	<0.008	<0.005	<0.005
DOC	mg/L	16	80.4	108	12	156	207	130	34.4	67.5	122	82.4	53.9	77.6	40.8	44.2	73.7	11.5	26.4
Fluoride	mg/L	0.2	0.1	< 0.1	< 0.1	9.4	0.8	< 3	< 0.1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	<1.8	<0.1	<1.8
Hardness	mg/L	628	803	941	751	1200	925	1090	370	875	952	982	824	1550	823	742	700	600	807
Iron	mg/L	20.8	7.3	12.6	340	16.8	7.96	59.6	0.226	36.1	8.2	24.4	4.84	3520	3.34	7.57	5.78	23.8	4.07
Magnesium	mg/L	34.5	63.3	57.5	40.4	102	59.1	104	39.4	86.7	78.3	98.4	61.8	81.7	93.3	57.1	68.3	28.7	68.4
Manganese	mg/L	0.655	0.526	1.33	0.583	1.48	0.63	0.837	0.026	0.519	0.48	0.36	0.379	1.39	0.176	0.392	0.179	0.46	0.454
Mercury	mg/L	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002
Nitrate	mg/L	0.2	< 0.05	< 0.05	< 0.05	< 0.5	< 0.05	< 1	8.54	0.61	< 0.5	< 0.5	9.61	0.97	< 0.5	0.87	10.3	<0.05	<1.00
Nitrite	mg/L	< 0.1	< 0.05	< 0.05	< 0.05	< 0.5	< 0.05	< 1	0.07	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.55	<0.05	<1.00
Tot Kjel N	mg/L	17.1	167	102	25.8	231	104	364	4.1	309	135	330	157	63.7	280	137	263	15.1	269
pH - lab	pH unit	7.1	7.49	7.59	7.44	7.27	7.74	7.87	8.54	7.8	7.84	7.72	7.73	7.09	7.88	7.76	7.99	7.64	7.97
Phenols	mg/L	< 0.001	0.046	0.279	0.02	0.364	0.14	< 0.002	< 0.002	0.036	0.274	0.044	< 0.001	< 0.01	0.004	0.013	0.001	<0.001	0.006
Phosphorus	mg/L	< 0.1	0.8	0.53	1.3	0.9	0.3	3.21	< 0.1	1.1	0.3	1.1	0.2	21.3	0.7	0.4	0.81	0.03	0.91
Potassium	mg/L	17.8	139	122	23	222	139	260	94.4	210	153	218	142	33.7	219	135	191	14.2	168
Sodium	mg/L	116	370	280	141	534	257	740	244	496	398	615	373	157	624	335	627	95.8	469
Sulphate	mg/L	39	53	124	32	23	10	121	94	58	124	56	139	18	89	80	158	37	42
Total Dissolved Solids	mg/L	995	2329	1984	1423	3446	1550	4318	1095	3296	2423	3673	2179	1837	3495	2089	2660	892	2530
TSS	mg/L	48	70			100	100	1000	10	360	16	114	42	35700	25	400	142	180	250
Turbidity	NTU	173	39.2			21	57	237	4.7	119	18.8	122	27.7	20.6	24.8	1010	205	476	23
Colour	TCU	13	180			350	148	367	89	256	531	301	185	242	253	131	258	9	246
Aluminum	mg/L	0.05	0.14	0.16	0.2	0.22	0.13	0.62	0.07	0.29	0.13	0.25	0.12	0.84	0.09	0.08	0.44	0.08	0.12
Antimony	mg/L	0.0002	0.021	0.0021	0.0032	0.0032	0.0022	0.002	0.0009	0.0021	0.0042	0.0034	0.0026	0.0008	0.0024	0.0026	0.0025	<0.0005	0.0016
Arsenic	mg/L	0.0024	0.0111	0.0077	0.0157	0.0162	0.0107	0.0189	0.0018	0.0171	0.0094	0.0208	0.0059	0.001	0.0115	0.0081	0.0151	0.0012	0.0148
Barium	mg/L	0.292	0.505	0.34	0.635	0.645	0.362	0.82	0.076	0.649	0.35	0.692	0.336	28.8	0.589	0.36	0.462	0.273	0.484
Beryllium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.001	<0.001	<0.001
Boron	µg/L	0.349	4.95	3.24	5.99	6.06	2.95	9.68	2.74	6.5	4.22	6.85	4.3	3.33	7.13	3.6	6.45	0.304	5.34
Cadmium	µg/L	0.00003	< 0.00007	< 0.00007	0.00002	0.00003	< 0.00007	< 0.00007	< 0.000070	< 0.000059	< 0.000059	< 0.000070	< 0.000070	0.000377	< 0.000070	< 0.000070	<0.005	<0.005	<0.005
Chromium	mg/L	0.0015	0.013	0.016	0.037	0.038	0.013	0.037	0.004	0.025	0.023	0.03	0.012	0.043	0.02	0.013	0.018	<0.002	0.019
Cobalt	mg/L	< 0.005	0.0045	0.0069	0.009	0.008	0.0052	0.0159	0.0039	0.013	0.009	0.0109	0.0071	0.0845	0.0107	0.008	0.014	<0.005	0.012
Copper	mg/L	0.001	0.0075	0.0055	0.0028	0.003	0.011	0.008	0.0055	0.0009	0.0049	0.0081	0.0056	0.0431	0.003	0.0061	0.006	<0.002	0.002
Lead	mg/L	0.00007	0.0005	0.0004	0.00061	0.00066	0.0016	0.0013	0.0002	0.00031	0.00042	0.0012	0.0001	0.0408	0.0002	0.0008	<0.02	<0.02	<0.02
Molybdenum	mg/L	0.0002	0.001	0.0008	0.0013	0.0014	0.0009	0.0021	0.0017	0.0029	0.0021	0.0019	0.0021	< 0.0005	0.002	0.0014	<0.01	<0.01	<0.01
Nickel	mg/L	< 0.01	0.04	0.03	0.06	0.06	0.03	0.09	0.03	0.06	0.04	0.06	0.04	0.04	0.06	0.03	0.05	<0.01	0.04
Selenium	mg/L	0.003	< 0.005	< 0.005	0.006	0.006	< 0.005	0.012	< 0.005	0.005	0.004	0.012	0.005	0.009	0.007	< 0.005	0.007	<0.005	<0.005
Silver	mg/L	0.00002	< 0.0001	< 0.0001	0.0009	0.0006	< 0.0001	< 0.0001	0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.005	<0.005	<0.005
Strontium	mg/L	0.71	1.42	1.24	1.72	1.76	1.35	2.73	0.671	2.39	1.84	2.56	1.59	4.11	2.37	1.66	1.8	0.64	1.85
Thallium	mg/L	< 0.00005	< 0.0003	< 0.0003	< 0.00005	< 0.00005	< 0.0003	< 0.0003	< 0.0003	0.04	0.021	0	< 0.0003	< 0.0003	< 0.0003	< 0.0003	<0.0003	<0.0003	<0.0003
Vanadium	mg/L	0.0004	0.0108	0.0079	0.0177	0.0181	0.0074	0.0239	0.0017	0.0155	0.0084	0.0182	0.0057	0.0874	0.0148	0.0071	0.014	<0.005	0.012
Zinc	mg/L	0.01	0.589	0.12	0.049	0.048	0.034	0.185	0.363	0.194	0.069	0.32	0.028	0.324	0.044	0.041	0.026	0.01	0.195

Ground Water Chemistry Summary - VOC

Parameters	Units	ODWQS	LPC-1 21-Jan-15	LPC-1 25-Jul-18	LPC-1 9-Oct-18	LPC-1 31-May-21	LPC-1 18-Oct-23	LPC-1 15-Aug-24	LPC-2 13-Jul-15	LPC-2 14-Jul-16	LPC-2 25-Apr-18	LPC-2 10-May-19	LPC-2 11-May-19
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 0.5	< 0.1	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	µg/L	N/A	< 0.5	< 0.1	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 0.5	< 0.4	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	µg/L	N/A	< 0.5	< 0.1	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethane	µg/L	N/A	< 0.5	< 0.1	< 0.5	< 0.5	<0.5	<0.5	**0.9**	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethylene	µg/L	14		< 0.1	< 0.5	< 0.5	<0.5	<0.5			< 0.5	< 0.5	< 0.5
Ethylene Dibromide	µg/L	N/A	< 0.2	< 0.1	< 0.2	< 0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	µg/L	3	< 0.5	< 0.1	< 0.5	< 0.5	<0.5	**0.6**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane	µg/L	5	< 0.5	< 0.1	< 0.5	< 0.5	<0.5	<0.5	**1.8**	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloropropane	µg/L	N/A	< 0.5	< 0.1	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3-Dichlorobenzene	µg/L	N/A	< 0.5	< 0.1	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene	µg/L	1	**1.1**	< 0.2	**2.7**	**1.5**	**1.6**	**5.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl Ethyl Ketone	µg/L	N/A		< 1	< 20	< 20	<20	<2		< 20	**660**	**310**	< 20
Methyl Isobutyl Ketone	µg/L	N/A		< 1	< 20	< 20	<20	<20		< 20	< 20	< 20	< 20
Acetone	µg/L	N/A	< 30	< 2	< 30	< 30	<30	<30	**250**	< 30	**510**	**320**	< 30
Benzene	µg/L	5	**1.9**	< 0.5	**1.1**	**1.7**	**2.9**	**4.8**	**0.9**	< 0.5	**1.4**	**0.7**	< 0.5
Bromodichloromethane	µg/L	N/A	< 2	**0.1**	< 2	< 2	<2	<2	< 2	< 2	< 2	< 2	< 2
Bromoform	µg/L	N/A	< 5	< 0.1	< 5	< 5	<5	<5	< 5	< 5	< 5	< 5	< 5
Bromomethane	µg/L	N/A	< 0.5	< 0.3	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	5	< 0.2	< 0.2	**5.7**	< 0.2	<0.2	<0.2	< 0.2	< 0.2		< 0.2	< 0.2
Chlorobenzene	µg/L	80	**1**	**2.1**	< 1	**1.2**	**1.8**	**26**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	µg/L	N/A	< 1	< 0.1	< 0.5	< 1	<1	<1	< 1	< 1	< 1	< 1	< 1
cis 1,2-Dichloroethene	µg/L	N/A	< 0.5	< 0.1	< 0.5	< 0.5			**0.7**	< 0.5	< 0.5	< 0.5	< 0.5
cis 1,3-Dichloroethene	µg/L	N/A	< 0.5	< 0.1	< 2	< 0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	µg/L	N/A	< 2			< 2	<2	<2	< 2	< 2	< 2	< 2	< 2
Dichlorodifluoromethane	µg/L	N/A											
Ethylbenzene	µg/L	2.4	**0.7**	< 0.5	< 0.5	< 0.5	**1.1**	<0.5	**1.7**	< 0.5	**1.4**	**0.6**	< 0.5
m & p-Xylene	µg/L	N/A	**2.5**	< 0.4	< 1.0	< 1.0	**2**	**16**	**4.2**	< 1.0	**1.7**	**1.2**	< 1.0
o-Xylene	µg/L	N/A	< 0.5	< 0.1	< 0.5	< 0.5	<0.5	<0.5	**1.3**	< 0.5	**1**	**0.6**	< 0.5
Toluene	µg/L	N/A	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	**5.9**	< 0.5	**1.8**	**12.6**	< 0.5
Methyl tert-Butyl Ether	µg/L	N/A	< 2	< 1	< 2	< 2	<2	<2	< 2	< 2	< 2	< 2	< 2
Methylene Chloride	µg/L	N/A	< 5	< 0.3	< 0.3	< 5	<5	<5	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	µg/L	2	< 0.5	< 0.2	< 0.5	< 0.2	<0.2	<0.2	< 0.5	< 0.5	< 0.5	< 0.2	< 0.2
Trichloroethylene	µg/L	5	< 0.5			< 0.5	<0.5	<0.5	< 0.5			< 0.5	< 0.5
Xylene, m,p,o-	µg/L	300	**2.8**	< 0.4	< 1.1	< 1.1	**2**	<1.1	**5.4**	< 1.1	**2.7**	**1.8**	< 1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Ground Water Chemistry Summary -
VOC

Parameters	Units	ODWQS	LPC-2 4-May-21	LPC-2 4-May-22	LPC-2 24-Aug-22	LPC-2 24-Apr-23	LPC-2 25-Apr-24
1,1,1,2-Tetrachloroethane	µg/L	N/A	< 10	< 0.5	< 0.5	< 0.5	<0.5
1,1,1-Trichloroethane	µg/L	N/A	< 10	< 0.5	< 0.5	< 0.5	<0.5
1,1,2,2 Tetrachloroethane	µg/L	N/A	< 10	< 0.5	< 0.5	< 0.5	<0.5
1,1,2-Trichloroethane	µg/L	N/A	< 10	< 0.5	< 0.5	< 0.5	<0.5
1,1-Dichloroethane	µg/L	N/A	< 10	< 0.5	< 0.5	< 0.5	<0.5
1,1-Dichloroethylene	µg/L	14	< 10	< 0.5	< 0.5	< 0.5	<0.5
Ethylene Dibromide	µg/L	N/A	< 4	< 0.2	< 0.2	<0.2	<0.2
1,2-Dichlorobenzene	µg/L	3	< 10	< 0.5	< 0.5	< 0.5	<0.5
1,2-Dichloroethane	µg/L	5	< 10	**0.5**	< 0.5	< 0.5	<0.5
1,2-Dichloropropane	µg/L	N/A	< 10	< 0.5	< 0.5	< 0.5	<0.5
1,3-Dichlorobenzene	µg/L	N/A	< 10	< 0.5	< 0.5	< 0.5	<0.5
1,4-Dichlorobenzene	µg/L	1	< 10	< 0.5	**2.9**	< 0.5	**1**
Methyl Ethyl Ketone	µg/L	N/A	**1500**	< 20	< 20	**30**	<2
Methyl Isobutyl Ketone	µg/L	N/A	< 400	< 20	< 20	< 20	<20
Acetone	µg/L	N/A	**1340**	< 30	< 30	**50**	<30
Benzene	µg/L	5	< 10	< 0.5	**2.5**	< 0.5	**0.8**
Bromodichloromethane	µg/L	N/A	< 40	< 2	< 2	< 2	<2
Bromoform	µg/L	N/A	< 100	< 5	< 5	< 5	<5
Bromomethane	µg/L	N/A	< 3	< 0.5	< 0.5	< 0.5	<0.5
Carbon Tetrachloride	µg/L	5	< 4	< 0.2	< 0.2	< 0.2	<0.2
Chlorobenzene	µg/L	80	< 10	< 0.5	**17**	< 0.5	**0.8**
Chloroform	µg/L	N/A	< 20	< 1	< 1	< 1	<1
cis 1,2-Dichloroethene	µg/L	N/A	< 10	< 0.5	< 0.5	< 0.5	<0.5
cis 1,3-Dichloroethene	µg/L	N/A	< 10	< 0.5	< 0.5	< 0.5	<0.5
Dibromochloromethane	µg/L	N/A	< 40	< 2	< 2	< 2	<2
Dichlorodifluoromethane	µg/L	N/A					
Ethylbenzene	µg/L	2.4	< 10	< 0.5	< 0.5	< 0.5	<0.5
m & p-Xylene	µg/L	N/A	< 20	< 1.0	**2.4**	< 1.0	<1
o-Xylene	µg/L	N/A	< 10	< 0.5	< 0.5	< 0.5	<0.5
Toluene	µg/L	N/A	< 10	< 0.5	< 0.5	< 0.5	<0.5
Methyl tert-Butyl Ether	µg/L	N/A	< 40	< 2	< 2	< 2	<2
Methylene Chloride	µg/L	N/A	< 6	< 5	< 5	< 5	<5
Vinyl Chloride	µg/L	2	< 2	< 0.2	< 0.2	< 0.2	<0.2
Trichloroethylene	µg/L	5	< 10			< 0.5	<0.5
Xylene, m,p,o-	µg/L	300	< 22	< 1.1	**2.4**	< 1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards
Bold & Highlighted - ODWQS exceedance
Bold - Detection

Leachate - PCBs

Parameters	PCB	NTA
Units	µg/L	mg/L
Leachate Pumping Chamber (LPC1)		
12-May-06	< 0.04	ND
29-Jun-06	< 0.04	
26-Oct-06	< 0.04	< 0.05
21-Dec-06	< 0.1	
27-Apr-07		< 0.05
30-May-07	< 0.001	< 0.05
22-Oct-07	< 0.001	< 0.05
27-Feb-08	< 0.001	
18-Mar-08	< 0.001	
17-Apr-08	< 0.001	< 0.05
18-Jun-08	< 0.001	
28-Jul-08	< 0.001	
22-Oct-08	< 0.001	**0.10**
4-May-09	**0.015**	
7-Jul-09	< 0.001	
27-Oct-09	< 0.001	
16-Nov-09	< 0.001	
5-May-10	< 0.001	
28-Oct-10	< 0.001	< 0.05
17-May-12	**0.002**	**0.07**
23-Jul-12	**0.002**	
25-Oct-12	< 0.001	**0.09**
27-May-14	< 0.05	
29-Oct-14	< 0.05	
27-May-15	< 0.05	
20-Oct-15	< 0.05	
24-May-16	< 0.05	< 0.03
17-Oct-16	< 0.05	< 0.03
25-May-17	< 0.05	< 0.03
17-Oct-17	< 0.05	< 0.03
8-May-18	< 0.05	< 0.03
10-Oct-18	< 0.05	< 0.03
15-May-19	< 0.05	< 0.03
9-Oct-19	< 0.05	< 0.03
11-May-20	<0.05	<0.03
13-Oct-20	<0.05	<0.03
20-Apr-21	<0.05	
31-May-21	<0.05	<0.03
11-Aug-21	<0.05	
19-May-22	<0.05	<0.03
25-May-23	<0.05	<0.03
18-Oct-23	<0.05	<0.03
8-May-24	<0.05	<0.03
10-Oct-24	<0.05	<0.1
Leachate Pumping Chamber New Cell (LPC2)		
24-May-06	< 0.1	
26-Oct-06	< 0.4	
26-Feb-08	< 0.001	
7-Jul-09	< 0.001	
12-Jul-10	< 0.001	
21-Jul-14	< 0.05	
13-Jul-15	< 0.05	
14-Jul-16	< 0.05	
25-Apr-18	< 0.05	
10-May-19	< 0.05	
30-Apr-20	< 0.05	
4-May-21	<0.05	
4-May-22	<0.05	
24-Apr-23	<0.05	
25-Apr-24	<0.05	

Leachate - BTEX compounds

Parameters	Benzene	Ethyl benzene	m/p-Xylene	o-Xylene	Toluene
Units	µg/L	µg/L	µg/L	µg/L	µg/L
Leachate Pumping Chamber (LPC1)					
5-Jan-06	<1		5.1	3.1	2.7
1-Mar-06	<1		1.2	4.4	<1
12-May-06	3.0		26.9	10.4	18.9
29-Jun-06	2.6		21.5	6.8	6.8
10-Aug-06	1.6		0.8	1.0	0.4
21-Sep-06	<2		<4	<3	<2
26-Oct-06	0.6		1.0	1.1	< 0.3
21-Dec-06	2.8		9.7	4.3	2.5
29-Jan-07	2.5		5.7	2.1	2.4
14-Feb-07	3.2		7.7	2.6	4.0
21-Mar-07	3.0		14.4	0.7	0.2
10-Apr-07	1.1		1.6	0.9	0.3
27-Apr-07	2.8		2.8	1.7	0.9
30-May-07	2.9		12.1	4.3	1.8
7-Jun-07	2.3		10.8	3.3	2.5
31-Jul-07	1.6		7.7	3.3	0.8
22-Oct-07	2,4		3.0	1.1	1.2
20-Nov-07	2.6		1.8	< 0.2	< 0.2
27-Feb-08	2.7		7.6	2.5	2.4
18-Mar-08	2.9		10.4	2.0	1.8
17-Apr-08	4.3		10.9	1.2	0.5
18-Jun-08	3.2		6.1	0.9	0.4
22-Oct-08	1.9		4.0	0.8	0.2
10-Dec-08	2.5		4.2	0.7	0.8
13-Jan-09	4.8	1.3	12.2	1.2	0.8
4-May-09	2.7	< 0.1	2.3	< 0.1	< 0.1
7-Jul-09	2.9	0.2	2.8	0.3	0.2
27-Oct-09	2.3	0.3	3.6	0.3	< 0.1
16-Nov-09	0.5	< 0.1	0.2	0.1	< 0.1
13-Jan-10	3.4	2.7	14.1	3.8	2.3
10-Feb-10	1.1	< 0.1	2.3	1.6	0.1
16-Mar-10	1.2	< 0.1	1.8	0.4	< 0.1
20-Apr-10	3.3	0.6	7.2	0.5	0.4
5-May-10	2.8	0.4	5.2	0.3	< 0.1
15-Jun-10	3.0	0.4	3.7	0.3	0.5
7-May-10	3.7	2.3	11.3	2.1	1.1
30-Sep-10	2.0	2.4	4.2	0.5	0.2
28-Oct-10	2.2	3.1	6.6	0.7	0.3
16-Nov-10	2.2	2.8	4.7	0.5	0.2
13-Dec-10	1.0	1.6	2.7	0.4	0.2
10-Jan-11	2.3	1.8	5.6	1.5	0.6
14-Feb-11	3.7	3.0	14.0	2.5	0.9
11-Mar-11	1.4	2.6	4.6	0.9	< 0.4
11-Apr-11	1.8	1.1	3.6	0.5	< 0.4
5-May-11	2.1	2.7	6.2	0.9	0.3
16-Jun-11	2.8	2.2	5.1	0.7	0.6
28-Jul-11	2.5	1.2	3.7	0.5	0.6
22-Aug-11	2.2	0.9	3.1	0.4	< 0.5
3-Oct-11	2.1	1.3	5.1	< 0.5	< 1.0
27-Oct-11	2.3	1.6	5.0	0.6	0.3
1-Dec-11	1.8	1.2	4.1	0.5	4.3
21-Dec-11	2.7	1.8	8.0	0.8	< 0.4
24-Jan-12	1.5	1.0	2.8	< 0.5	< 1.0
21-Feb-12	2.6	1.2	3.2	< 0.5	< 1.0
19-Mar-12	2.2	1.5	4.4	0.6	< 0.4
17-May-12	3.4	3.3	8.2	1.5	0.7
20-Jun-12	2.3	0.9	2.7	0.6	0.3
23-Jul-12	4.3	2.2	9.4	1.2	< 0.5
21-Aug-12	2.3	< 1.0	3.3	< 1.0	< 2.0
25-Oct-12	2.4	0.6	1.1	0.3	< 0.2
22-Nov-12	2.1	1.2	4.6	0.4	< 0.5
18-Dec-12	2.5	1.7	8.3	0.8	0.2
21-Apr-14	2.8	< 0.5	4.9	< 0.5	< 0.5
27-May-14	1.4	< 0.5	2.7	< 0.5	< 0.5
25-Jun-14	3.6	< 0.5	3.1	< 0.5	< 0.5
21-Jul-14	1.5	< 0.5	1.8	< 0.5	< 0.5
20-Aug-14	1.7	< 0.5	1.3	< 0.5	< 0.5
29-Sep-14	0.8	< 0.5	1.9	< 0.5	< 0.5
29-Oct-14	1.5	< 0.5	1.8	< 0.5	< 0.5
22-Dec-14	< 0.5	0.5	1.4	< 0.1	< 0.5
21-Jan-15	1.9	0.7	2.5	< 0.5	< 0.5
16-Mar-15	1.3	< 0.5	1.3	< 0.5	< 0.5
20-Apr-15	0.6	< 0.5	< 1.0	< 0.5	< 0.5
27-May-15	2.8	< 0.5	3.5	< 0.5	< 0.5

Leachate - BTEX compounds

Parameters	Benzene	Ethyl benzene	m/p-Xylene	o-Xylene	Toluene
Units	µg/L	µg/L	µg/L	µg/L	µg/L
22-Jun-15	**2.6**	< 0.5	**1.3**	< 0.5	< 0.5
13-Jul-15	**3.3**	< 0.5	**2.1**	< 0.5	< 0.5
5-Aug-15	**2.2**	< 0.5	**1.0**	< 0.5	< 0.5
20-Oct-15	**1.0**	< 0.5	< 0.4	< 0.1	< 0.5
18-Nov-15	**1.6**	**1.2**	**1.8**	< 0.5	< 0.5
16-Dec-15	**1.4**	**1.4**	**1.3**	< 0.5	< 0.5
27-Jan-16	**1.6**	**2.8**	**4.6**	**0.7**	**0.9**
4-Feb-16	**0.8**	**1.4**	**1.6**	< 0.5	< 0.5
30-Mar-16	**1.1**	< 0.5	**1.1**	< 0.5	< 0.5
12-Apr-16	**0.9**	**0.8**	< 1.0	< 0.5	< 0.5
21-Apr-16	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
24-May-16	**2.0**	< 0.5	< 1.0	< 0.5	< 0.5
14-Jun-16	**1.6**	< 0.5	<1.0	< 0.5	< 0.5
14-Jul-16	**1.9**	< 0.5	**1.3**	< 0.5	< 0.5
2-Aug-16	**1.4**	< 0.5	< 1.0	< 0.5	< 0.5
29-Sep-16	**1.5**	< 0.5	< 1.0	< 0.5	< 0.5
17-Oct-16	**1.6**	< 0.5	< 1.0	< 0.5	< 0.5
21-Nov-16	**1.2**	< 0.5	< 1.0	< 0.5	< 0.5
21-Dec-16	**1.2**	**0.7**	**1.4**	< 0.5	< 0.5
23-Jan-17	**0.5**	< 0.5	< 1.0	< 0.5	< 0.5
23-Feb-17	**0.9**	**0.7**	**1.1**	< 0.5	< 0.5
29-Mar-17	**1.1**	< 0.5	< 1.0	< 0.5	< 0.5
24-Apr-17	< 0.5	< 0.5	< 0.4	< 0.1	< 0.5
25-May-17	**1.3**	< 0.5	< 1.0	< 0.5	< 0.5
20-Jul-17	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
24-Aug-17	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
21-Sep-17	**2.5**	< 0.5	< 1.0	< 0.5	< 0.5
17-Oct-17	**1.5**	< 0.5	< 1.0	< 0.5	< 0.5
13-Nov-17	**1.4**	< 0.5	< 1.0	< 0.5	< 0.5
7-Dec-17	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
15-Jan-18	**1.2**	**1.6**	**1.2**	**0.9**	**2.1**
15-Feb-18	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
14-Mar-18	**2.4**	**1.5**	**1.8**	< 0.5	< 0.5
25-Apr-18	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
8-May-18	**2.5**	**1.9**	**2.2**	< 0.5	< 0.5
4-Jun-18	**0.7**	**1.3**	**2.1**	< 0.5	< 0.5
25-Jul-18	< 0.5	< 0.5	< 0.4	< 0.1	< 0.5
22-Aug-18	**0.9**	< 0.5	< 0.4	< 0.1	< 0.5
24-Sep-18	**1.5**	< 0.5	< 1.0	< 0.5	**0.9**
9-Oct-18	**1.1**	< 0.5	< 1.0	< 0.5	< 0.5
10-Oct-18	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
6-Nov-18	**1.8**	**0.7**	< 1.0	< 0.5	< 0.5
19-Dec-18	**3.4**	**2.5**	**2.5**	< 0.5	< 0.5
29-Jan-19	**2.3**	**2.7**	**4.2**	< 0.5	< 0.5
14-Feb-19	**0.7**	< 0.5	< 1.0	< 0.5	< 0.5
11-Mar-19	**0.6**	< 0.5	< 1.0	< 0.5	< 0.5
9-May-19	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
11-Jun-19	**1.6**	**1.1**	**1.1**	< 0.5	< 0.5
15-Jul-19	**0.6**	< 0.5	< 1.0	< 0.5	< 0.5
14-Aug-19	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
30-Sep-19	**1.8**	< 0.5	< 1.0	< 0.5	< 0.5
9-Oct-19	**1.7**	< 0.5	< 1.0	< 0.5	< 0.5
12-Nov-19	**1.5**	< 0.5	< 1.0	< 0.5	< 0.5
18-Dec-19	**1.9**	**0.8**	< 1.0	< 0.5	< 0.5
21-Jan-20	**1.4**	**3.0**	**1.9**	< 0.5	< 0.5
5-Feb-20	**1.0**	**0.6**	< 1.0	< 0.5	< 0.5
18-Mar-20	**1.2**	**0.7**	< 1.0	< 0.5	< 0.5
30-Apr-20	**1.5**	**0.7**	**1.0**	< 0.5	< 0.5
11-May-20	**1.6**	**0.7**	< 0.5	< 1.0	< 0.5
24-Jun-20	**1.3**	**0.6**	< 1.0	< 0.5	< 0.5
13-Jul-20	**1.4**	< 0.5	< 1.0	< 0.5	< 0.5
11-Aug-20	**1.5**	< 0.5	< 1.0	< 0.5	< 0.5
9-Sep-20	**1.2**	< 0.5	< 1.0	< 0.5	< 0.5
13-Oct-20	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
25-Nov-20	**1.1**	< 0.5	< 1.0	< 0.5	< 0.5
18-Jan-21	**1.2**	< 0.5	< 1.0	< 0.5	< 0.5
3-Mar-21	**1.0**	**0.6**	< 1.0	< 0.5	< 0.5
29-Mar-21	**0.6**	**0.6**	< 1.0	< 0.5	< 0.5
4-May-21	**1.7**	**1.0**	**1.1**	< 0.5	< 0.5
31-May-21	**1.7**	< 0.5	< 1.0	< 0.5	< 0.5
22-Jun-21	**1.4**	< 0.5	< 1.0	< 0.5	< 0.5
26-Jul-21	**2.5**	**0.8**	**1.2**	< 0.5	< 0.5
16-Aug-21	**1.3**	< 0.5	< 1.0	< 0.5	< 0.5
28-Sep-21	**1.5**	< 0.5	**1.2**	< 0.5	< 0.5
13-Oct-21	**1.9**	< 0.5	< 1.0	< 0.5	< 0.5
29-Nov-21	**0.6**	< 0.5	< 1.0	< 0.5	< 0.5
13-Dec-21	**1.0**	**0.8**	**1.5**	< 0.5	< 0.5
25-Jan-22	**1.3**	**2.4**	**2.4**	< 0.5	< 0.5
22-Feb-22	**1.8**	**0.5**	**1.2**	< 0.5	< 0.5
21-Mar-22	**0.8**	< 0.5	< 1.0	< 0.5	< 0.5
4-May-22	**1.4**	**0.7**	**1.0**	< 0.5	< 0.5
19-May-22	**1.3**	< 0.5	< 1.0	< 0.5	< 0.5
21-Jun-22	**1.8**	**0.6**	< 1.0	< 0.5	< 0.5

Leachate - BTEX compounds

Parameters	Benzene	Ethyl benzene	m/p-Xylene	o-Xylene	Toluene
Units	µg/L	µg/L	µg/L	µg/L	µg/L
27-Jul-22	**2.3**	< 0.5	< 1.0	< 0.5	< 0.5
24-Aug-22	**1.3**	< 0.5	< 1.0	< 0.5	< 0.5
13-Sep-22	**1.5**	< 0.5	< 1.0	< 0.5	< 0.5
26-Oct-22	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
17-Nov-22	**1.9**	< 0.5	< 1.0	< 0.5	< 0.5
7-Dec-22	**1.4**	< 0.5	< 1.0	< 0.5	< 0.5
18-Jan-23	**1.4**	**0.6**	< 1.0	< 0.5	< 0.5
10-Feb-23	**0.7**	< 0.5	< 1.0	< 0.5	< 0.5
1-Mar-23	**1.5**	**0.6**	<1	<0.5	<0.5
24-Apr-23	**1.8**	**0.8**	**1.1**	< 0.5	< 0.5
25-May-23	**1.8**	**0.5**	< 1.0	< 0.5	< 0.5
14-Jun-23	**3.6**	**0.6**	**1.8**	< 0.5	< 0.5
6-Jul-23	**4.0**	**0.6**	**1.6**	<0.5	<0.5
15-Aug-23	**3.2**	**1.2**	**2.0**	<0.5	<0.5
18-Sep-23	**3.4**	**0.6**	**1.0**	<0.5	<0.5
18-Oct-23	**2.9**	**1.1**	**2.0**	<0.5	<0.5
2-Nov-23	**1.9**	**0.8**	**2.0**	<0.5	<0.5
18-Dec-23	**2.7**	**1.0**	**1.0**	<0.5	<0.5
25-Jan-24	**1.9**	**0.9**	**1.0**	<0.5	<0.5
7-Feb-24	**2.1**	**0.7**	<1	<0.5	<0.5
14-Mar-24	**2.1**	**0.7**	<1	<0.5	<0.5
25-Apr-24	<0.5	<0.5	<1	<0.5	<0.5
8-May-24	**1.0**	<0.5	<1	<0.5	<0.5
12-Jun-24	**1.9**	<0.5	<1	<0.5	<0.5
30-Jul-24	**3.3**	**0.8**	**2.0**	<0.5	<0.5
15-Aug-24	**4.8**	<0.5	**16.0**	<0.5	<0.5
30-Sep-24	**2.4**	**1.0**	**2.0**	<0.5	<0.5
10-Oct-24	**1.4**	<0.5	**1.0**	<0.5	<0.5
14-Nov-24	**1.5**	<0.5	<1	<0.5	<0.5
18-Dec-24	**1.3**	<0.5	<1	<0.5	<0.5

Leachate - BTEX compounds

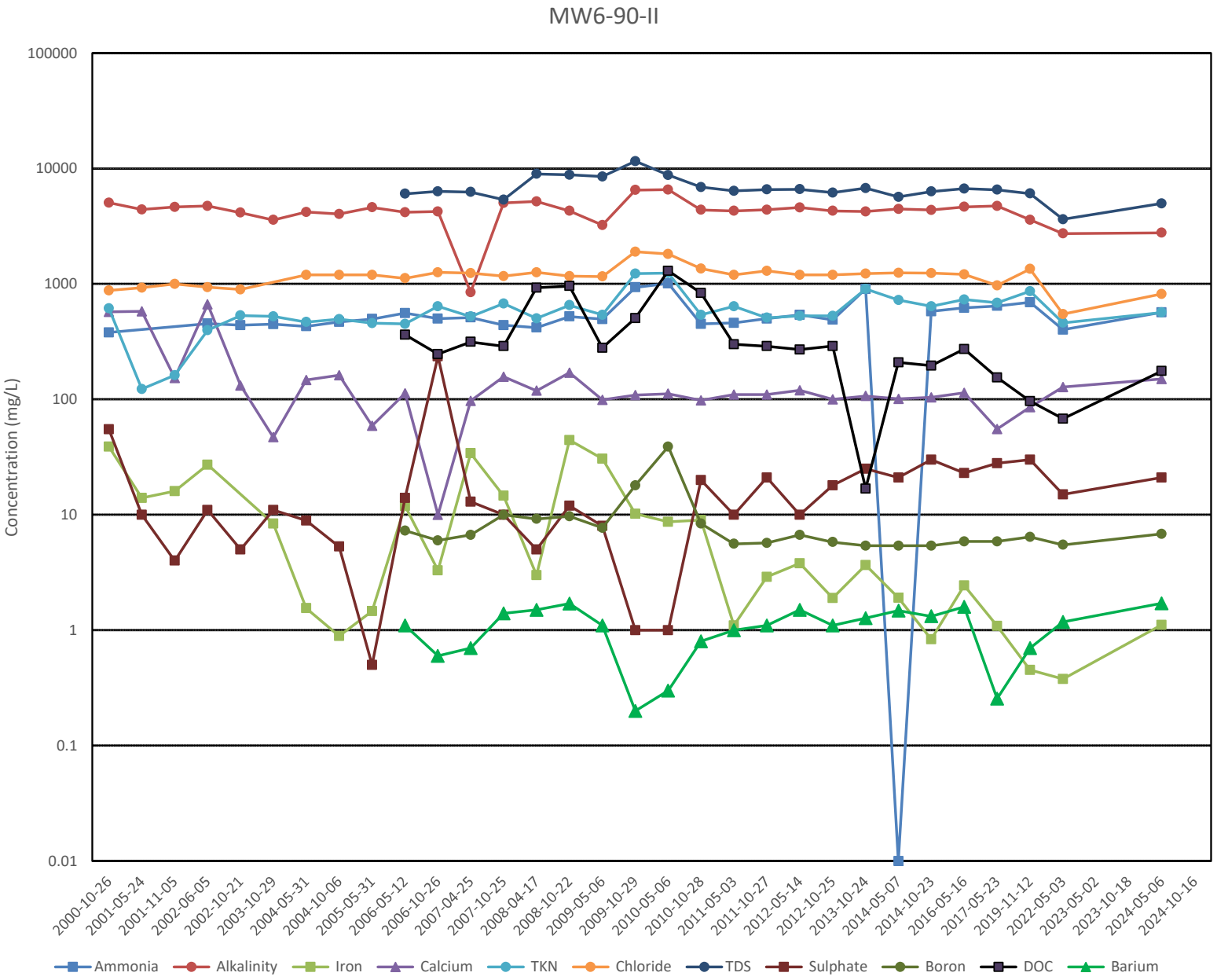
Parameters	Benzene	Ethyl benzene	m/p-Xylene	o-Xylene	Toluene
Units	µg/L	µg/L	µg/L	µg/L	µg/L
Leachate Pumping Chamber New Cell (LPC2)					
24-May-06	<40		<40	<40	<40
26-Oct-06	**0.6**		**2.4**	**1.3**	**39.8**
29-Jan-07	**0.6**		< 0.4	< 0.2	**12.5**
10-Apr-07	**0.4**		< 0.4	**0.2**	**11.1**
27-Apr-07	**0.3**		< 0.4	< 0.2	**10.7**
30-May-07	< 0.2		< 0.4	< 0.2	**19.5**
22-Oct-07	< 0.2		**1.2**	< 0.2	**23.9**
26-Feb-08	< 0.2		< 0.4	< 0.2	**4.2**
18-Mar-08	< 0.2		< 0.4	< 0.2	**1.9**
23-Apr-08	**0.1**		**0.4**	< 0.1	**3.1**
18-Jun-08	**0.4**		**0.9**	**0.3**	**2.5**
22-Oct-08	**0.3**		**0.8**	**0.3**	**4.3**
4-May-09	**0.5**	**1.4**	< 0.1	**1.8**	**14.0**
7-Jul-09	**0.5**	**1.1**	**3.7**	**1.7**	**1.3**
27-Oct-09	**0.7**	**2.0**	**5.9**	**2.7**	**41.1**
16-Nov-09	**0.9**	**1.8**	**4.7**	**2.2**	**44.8**
5-May-10	**0.4**	**1.8**	**3.2**	**1.4**	**35.0**
12-Jul-10	**1.5**	**4.2**	**11.5**	**4.6**	**110.0**
24-Aug-10	**1.3**	**4.2**	**10.9**	**4.1**	**120.0**
28-Oct-10	**0.6**	**1.5**	**3.4**	**1.4**	**60.0**
5-May-11	**0.3**	**0.7**	**1.4**	**0.6**	**7.9**
27-Oct-11	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0
17-May-12	< 0.5	< 0.5	**0.6**	< 0.5	< 1.0
25-Oct-12	< 2.5	< 2.5	< 2.5	< 2.5	< 5.0
26-Feb-14	**0.7**	< 0.5	< 1.0	< 0.5	**3.4**
27-May-14	< 0.5	< 0.5	**1.4**	< 0.5	**7.8**
21-Jul-14	**0.5**	< 0.5	< 1.0	< 0.5	**5.8**
29-Oct-14	< 0.5	< 0.5	< 1.0	< 0.5	**1.2**
13-Jul-15	**0.9**	**1.7**	**4.2**	**1.3**	**5.9**
14-Jul-16	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
24-Apr-16	< 0.5	< 0.5	< 0.4	< 0.1	< 0.5
25-Apr-18	**1.4**	**1.4**	**1.7**	**1.0**	**1.8**
31-Jul-18	**1.9**	**0.8**	**1.4**	< 0.5	< 0.5
10-May-19	**0.7**	**0.6**	**1.2**	**0.6**	**12.6**
30-Apr-20	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
4-May-21	< 10	< 10	< 20	< 10	< 10
4-May-22	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
24-Aug-22	**2.5**	< 0.5	**2.4**	< 0.5	< 0.5
26-Oct-22	**1.7**	< 0.5	< 1.0	< 0.5	< 0.5
24-Apr-23	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5
25-Apr-24	**0.8**	<0.5	<1	<0.5	<0.5

Leachate - Pesticides

Parameters	pp'DDD	pp'DDE	pp'DDT	Aldrin	BHC Alpha	Chordane Alpha-	Endosulphan I	BHC Beta	Endosulphan II	Dieldrin	Endosulphan Sulphate	Endrin	Heptachlor	Heptachlor Epoxide	Methoxychlor	Mirex	op'DDT	Chlordane Gamma-	Chlordane oxy	DDT + Metabolics	Lindane (Hexachlorocyclohexane) Gamma	Gross Alpha	Gross Beta	Nitrilotriacetic acid (NTA)
Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	Bq/L	Bq/L	mg/L
LPC-1																								
12-May-06		<0.2	<0.2	<0.2	<0.2		<0.8	<0.2	<0.8	<0.2	<0.8	<0.2	<0.2	<0.2	<0.4	<0.4						<0.1	**1.00**	
29-Jun-06		<0.2	<0.2	<0.2	<0.2		<0.8	<0.2	<0.8	<0.2	<0.8	<0.2	<0.2	<0.2	<0.4	<0.4						<0.1	**1.70**	
26-Oct-06		<0.2	<0.2	<0.2	<0.2		<0.8	<0.2	<0.8	<0.2	<0.8	<0.2	<0.2	<0.2	<0.4	<0.4						<0.1	**1.00**	
21-Dec-06		<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1						**0.40**	**1.50**	
27-Apr-07		<0.2	<0.2	<0.2	<0.2		<0.8	<0.2	<0.8	<0.2	<0.8	<0.2	<0.2	<0.2	<0.4	<0.4						<0.1	<0.1	
30-May-07		<0.003	<0.003	<0.001	<0.004		<0.003	<0.002	<0.003	<0.001	<0.013	<0.002	<0.001	<0.001	<0.008	<0.001						<0.1	**1.40**	
18-Mar-08		<0.003	<0.003	<0.001	<0.004		<0.003	<0.002	<0.003	<0.001	<0.013	<0.002	<0.001	<0.001	<0.008	<0.001						<0.1	**0.90**	
17-Apr-08		<0.003	<0.003	<0.001	<0.004		<0.003	<0.002	<0.003	<0.001	<0.013	<0.002	<0.001	<0.001	<0.008	<0.001						**0.20**	**1.20**	
22-Oct-08		<0.003	<0.003	<0.001	<0.004		<0.003	<0.002	<0.003	<0.001	<0.013	<0.002	<0.001	<0.001	<0.008	<0.001						**0.20**	**1.70**	
4-May-09		<0.003	<0.003	<0.005	<0.004		<0.003	<0.002	<0.003	<0.001	<0.013	<0.002	<0.001	<0.001	<0.008	<0.001								
27-Oct-09		<0.003	<0.003	<0.005	<0.004		<0.003	<0.002	<0.003	<0.001	<0.013	<0.002	<0.001	<0.001	<0.008	<0.001								
16-Nov-09		<0.003	<0.003	<0.005	<0.004		<0.003	<0.002	<0.003	<0.001	<0.013	<0.002	<0.001	<0.001	<0.008	<0.001								
5-May-10	< 0.003	< 0.003	< 0.003	< 0.005	< 0.004	< 0.003	< 0.003	< 0.002	< 0.003	< 0.001	< 0.013	< 0.002	< 0.001	< 0.001	< 0.008	< 0.001	< 0.003	< 0.003				< 0.1	**0.30**	
28-Oct-10	< 0.003	< 0.003	< 0.003	< 0.005	< 0.004	< 0.003	< 0.003	< 0.002	< 0.003	< 0.001	< 0.013	< 0.002	< 0.001	< 0.001	< 0.008	< 0.001	< 0.003	< 0.003				<0.1	**0.40**	
5-May-11	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005							
27-Oct-11	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005							
17-May-12	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005					< 0.005	< 0.005	
25-Oct-12	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005					< 0.005	< 0.005	
27-May-14	< 0.1	< 0.1	< 0.01	< 0.01	< 0.4	< 0.04	< 0.05	< 0.4	< 0.05	< 0.02	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.01	< 0.04				**0.50**	**0.65**	
29-Oct-14	< 0.1	< 0.1	< 0.01	< 0.01	< 0.4	< 0.04	< 0.05	< 0.4	< 0.05	< 0.02	< 0.05	< 0.05	< 0.01	< 0.01	< 0.1	< 1	< 0.01	< 0.04				< 0.2	**0.44**	
27-May-15			< 0.01	< 0.01	< 0.4	< 0.04		< 0.4		< 0.02	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1						< 0.1	**0.53**	
20-Oct-15			< 0.01	< 0.01	< 0.4	< 0.04		< 0.4		< 0.02	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1						< 0.1	**0.65**	
24-May-16	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05				< 0.1	**0.45**	
17-Oct-16	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05				< 0.11	**0.89**	
25-May-17	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05				< 0.11	**0.52**	
17-Oct-17	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05				**0.30**	**0.69**	
8-May-18	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4		< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05				< 0.1	**0.45**	
9-Oct-18	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4		< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05						
10-Oct-18	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4		< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05				**0.60**	**0.62**	
15-May-19	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	<0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05	<0.04	<0.01	<0.1	**0.33**	**0.87**	<0.03
9-Oct-19	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	<0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05	<0.04	<0.01	<0.1	**0.23**	**0.97**	
11-May-20	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	<0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05	<0.04	<0.01	<0.1	**0.19**	**0.13**	<0.03
13-Oct-20	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	<0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05	<0.04	<0.01	<0.1	<0.31	**0.60**	
31-May-21	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	<0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05	<0.04	<0.01	<0.1	<0.10	<0.21	<0.03
13-Oct-21	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	<0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05	<0.04	<0.01	<0.1			
19-May-22	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	<0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05	<0.04	<0.01	<0.1	**0.2**	**0.62**	<0.3
17-Nov-22	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	<0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05	<0.04	<0.01	<0.1	<0.10	**3.3**	<0.03
25-May-23	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	<0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05	<0.04	<0.01	<0.1	<0.10	**0.46**	<0.03
18-Oct-23	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	<0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 1	< 0.05	< 0.05	<0.04	<0.01	<0.1	<0.10	**1.23**	<0.03
08-May-24	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	<0.05	<0.01	< 0.05	< 0.05	< 0.1	<0.02	<0.05	< 1	< 0.05	< 0.05			<0.01	**0.13**	**0.55**	<0.03
10-Oct-24	< 0.05	< 0.01	< 0.05	< 0.01	< 0.4	< 0.05	< 0.05	< 0.4	<0.05	<0.01	< 0.05	< 0.05	<0.01	<0.01	<0.05	< 1	< 0.05	< 0.05			<0.01	**0.5**	**1.7**	<0.1

APPENDIX F

Time Trend Chemistry Graphs


MW6-90-II
Concentration (mg/L)
100000
10000
1000
100
10
1
0.1
0.01
2000-10-26
2001-05-24
2001-11-05
2002-06-05
2002-10-21
2003-10-29
2004-05-31
2004-10-06
2005-05-31
2006-05-12
2006-10-26
2007-04-25
2007-10-25
2008-04-17
2008-10-22
2009-05-06
2009-10-29
2010-05-06
2010-10-28
2011-05-03
2011-10-27
2012-05-14
2012-10-25
2013-10-24
2014-05-07
2014-10-23
2016-05-16
2017-05-23
2019-11-12
2022-05-03
2023-05-02
2023-10-18
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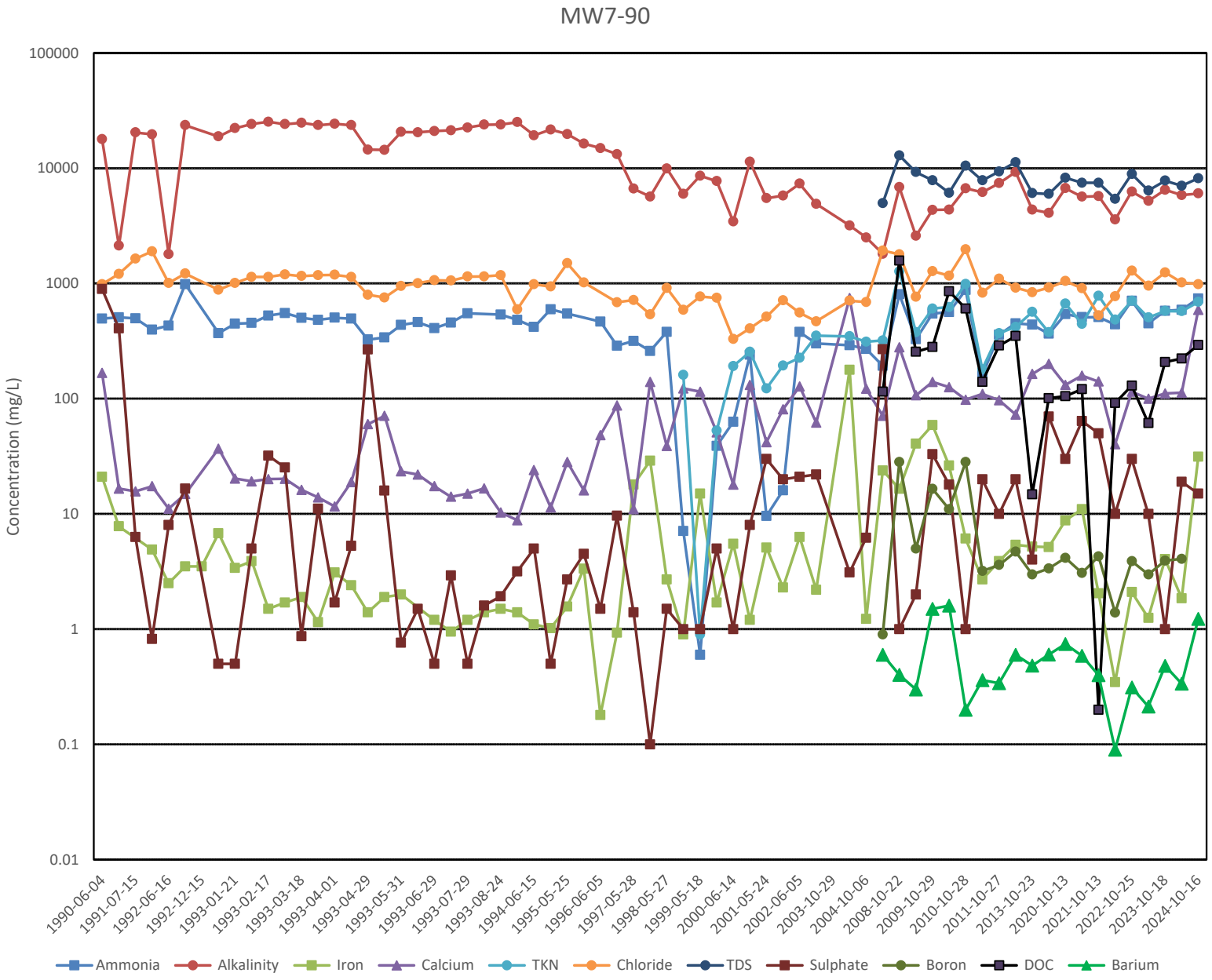
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW7-90
Concentration (mg/L)
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10000
1000
100
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0.1
0.01
1990-06-04
1991-07-15
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1993-04-29
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1993-07-29
1993-08-24
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1997-05-28
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1999-05-18
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2001-05-24
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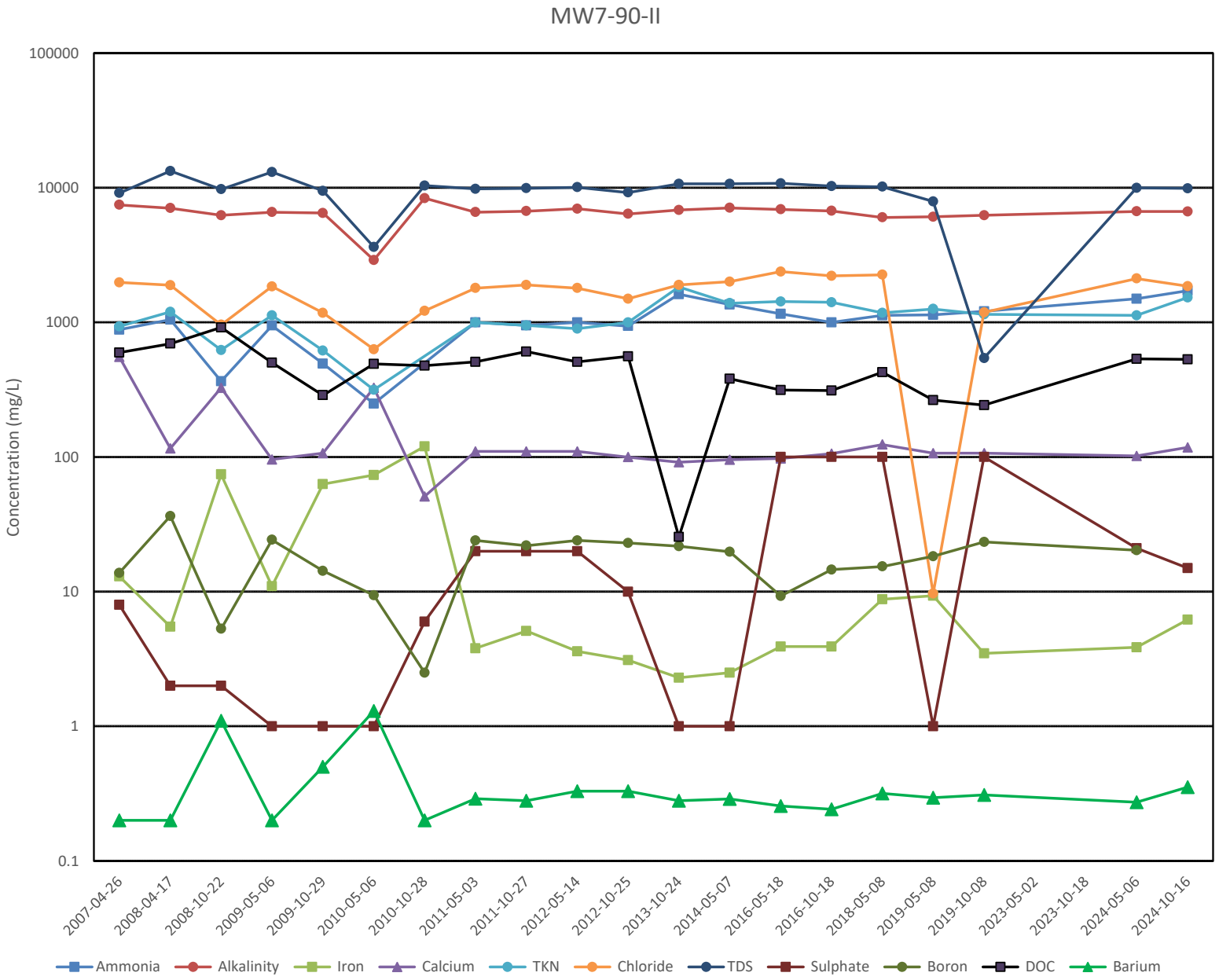
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW7-90-II
Concentration (mg/L)
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10000
1000
100
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2008-04-17
2008-10-22
2009-05-06
2009-10-29
2010-05-06
2010-10-28
2011-05-03
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2013-10-24
2014-05-07
2016-05-18
2016-10-18
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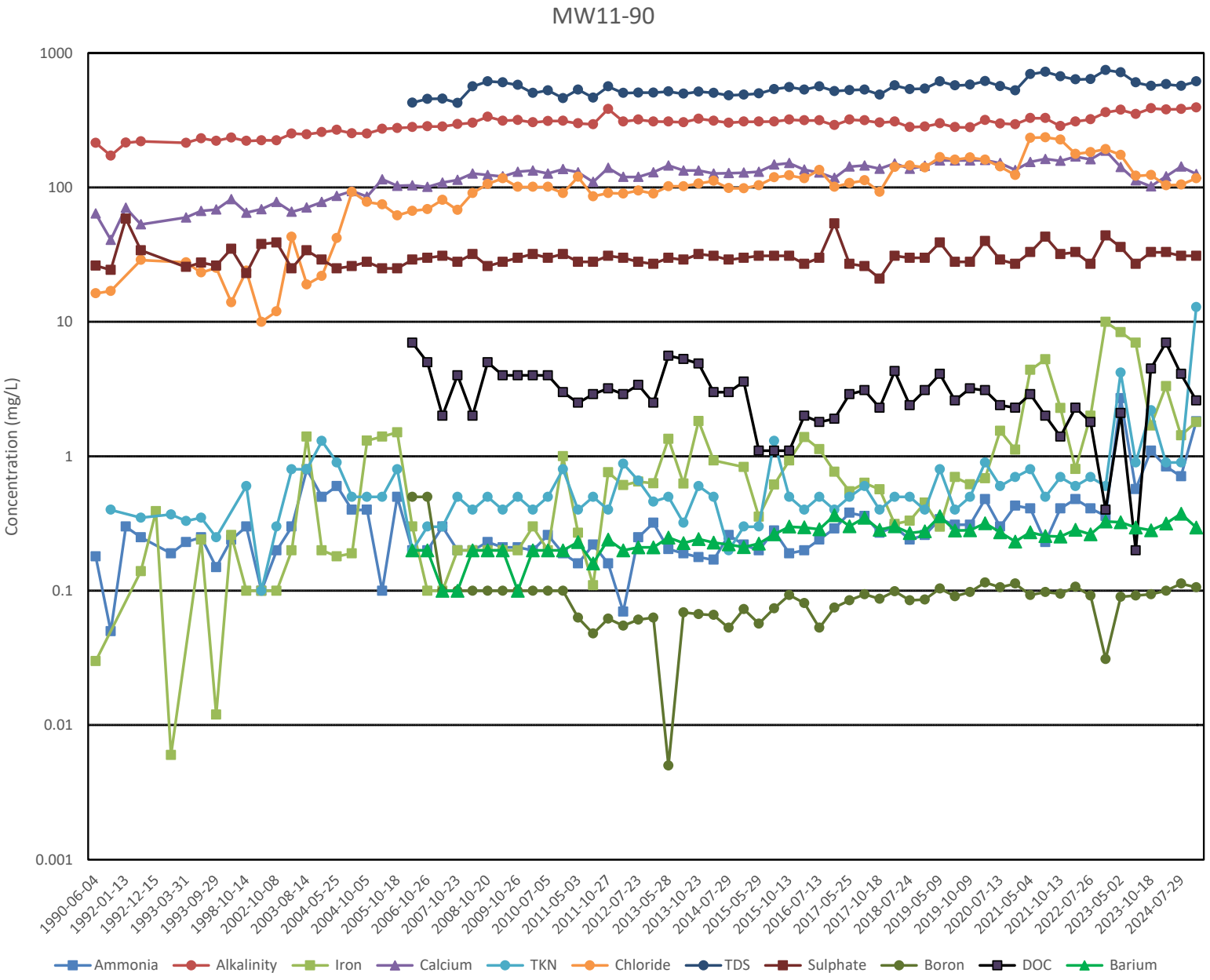
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW11-90
Concentration (mg/L)
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100
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1
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0.01
0.001
1990-06-04
1992-01-13
1992-12-15
1993-03-31
1993-09-29
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2009-10-26
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2023-05-02
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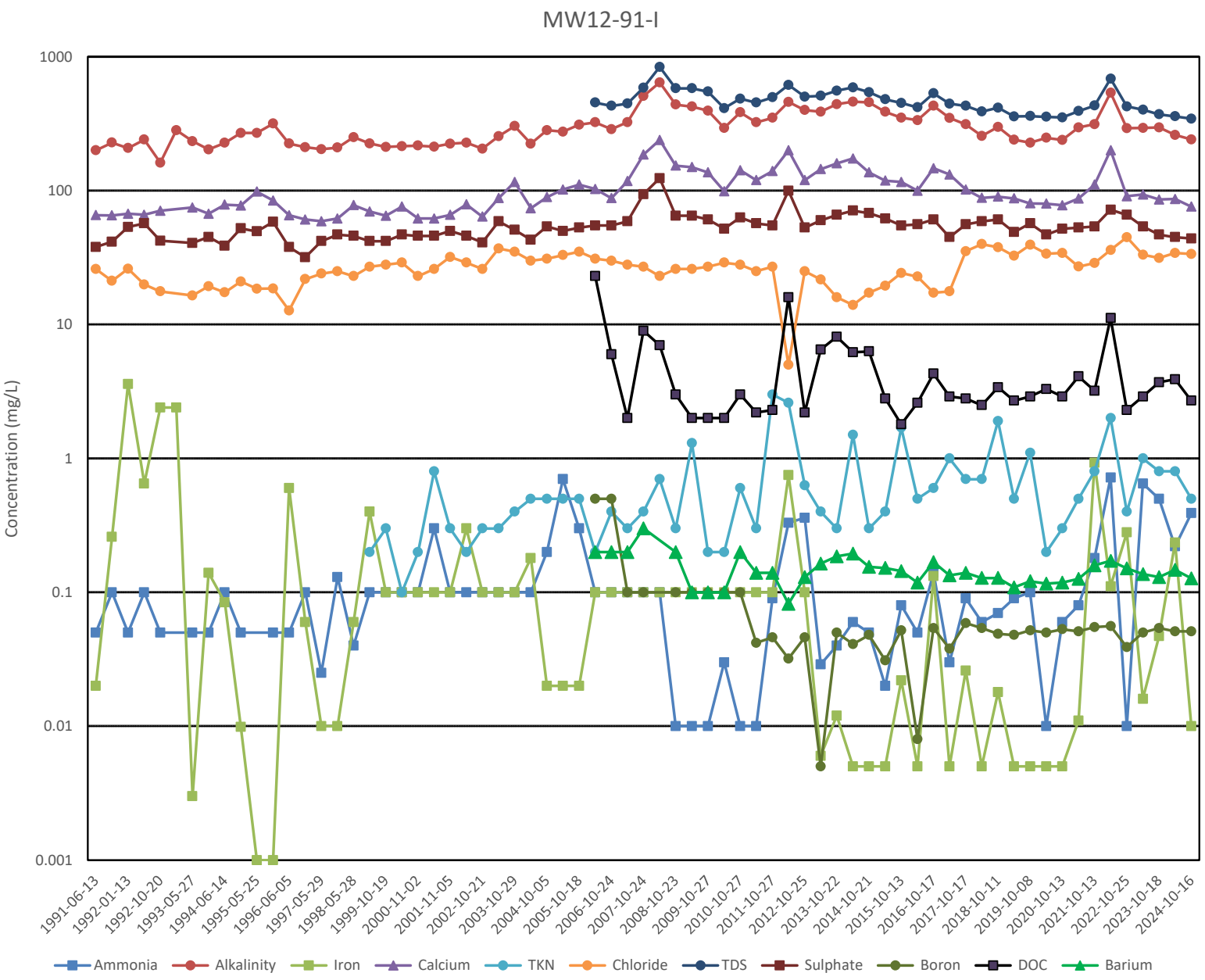
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW12-91-I
Concentration (mg/L)
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0.01
0.001
1991-06-13
1992-01-13
1992-10-20
1993-05-27
1994-06-14
1995-05-25
1996-06-05
1997-05-29
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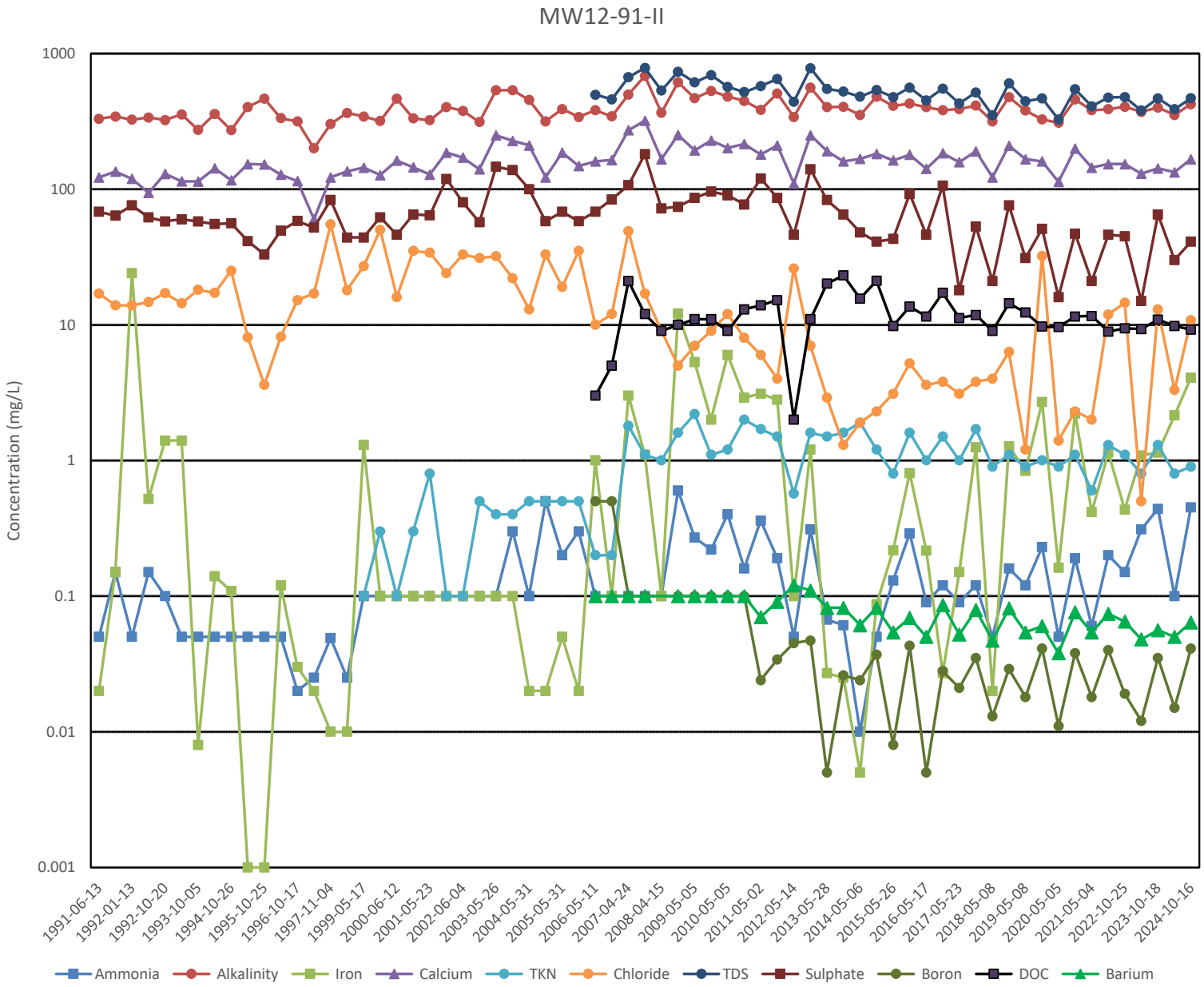
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW12-91-II
Concentration (mg/L)
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0.01
0.001
1991-06-13
1992-01-13
1992-10-20
1993-10-05
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1995-10-25
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2009-05-05
2010-05-05
2011-05-02
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2021-05-04
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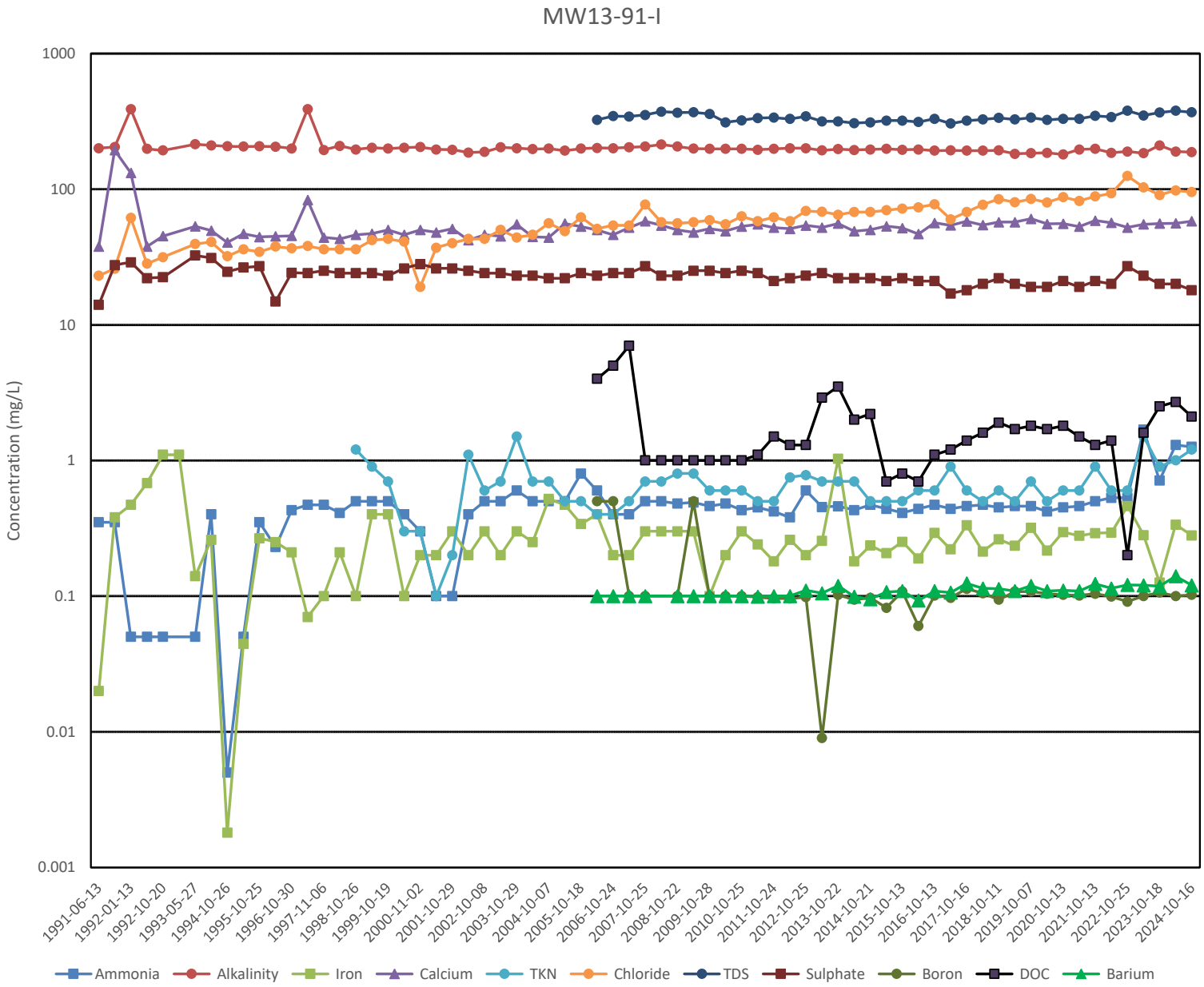
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW13-91-I
Concentration (mg/L)
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0.01
0.001
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1993-05-27
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1995-10-25
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1998-10-26
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Iron
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TKN
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Sulphate
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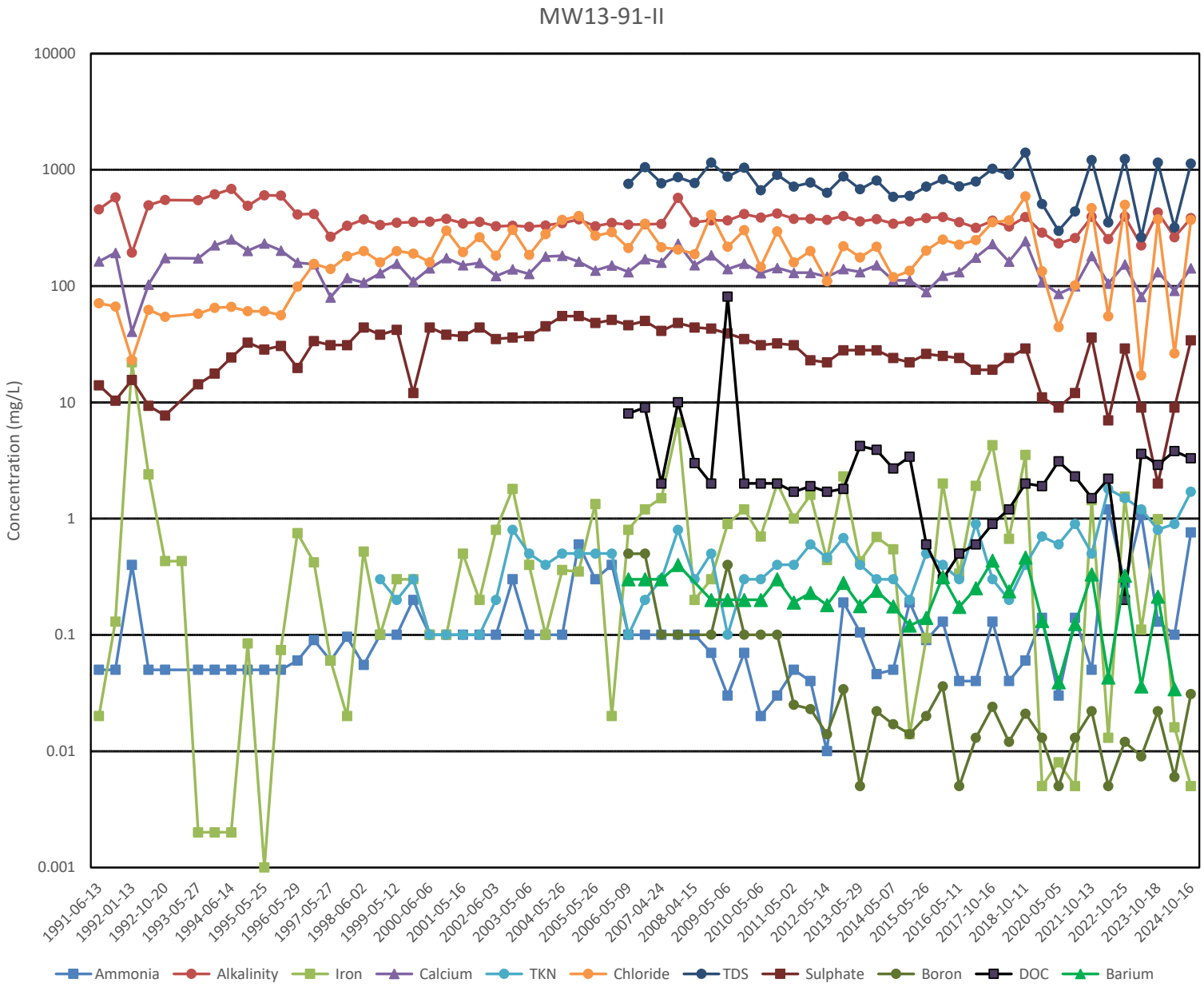
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Concentration (mg/L)
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0.01
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1998-06-02
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2014-05-07
2015-05-26
2016-05-11
2017-10-16
2018-10-11
2020-05-05
2021-10-13
2022-10-25
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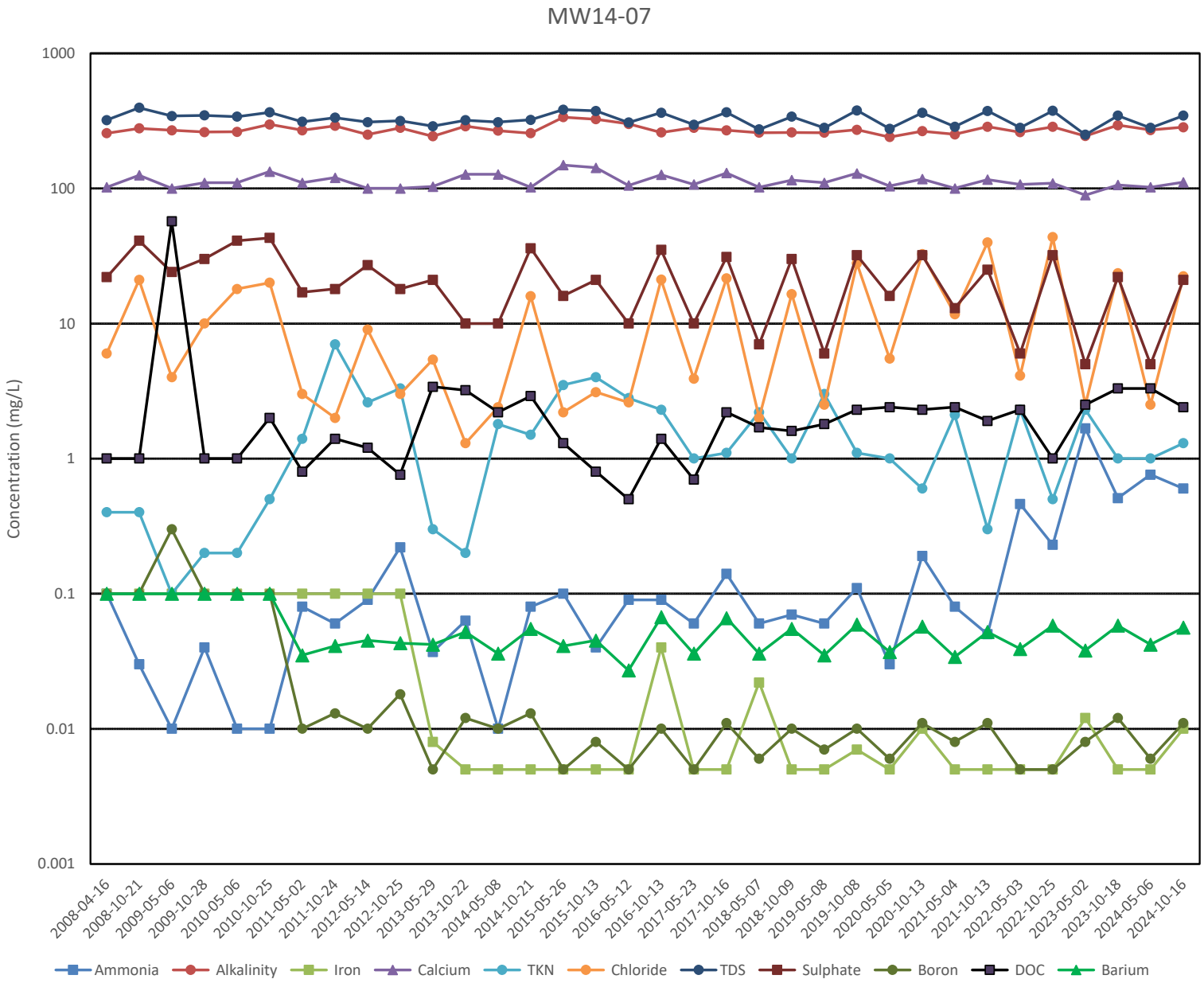
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW14-07
Concentration (mg/L)
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0.01
0.001
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2009-05-06
2009-10-28
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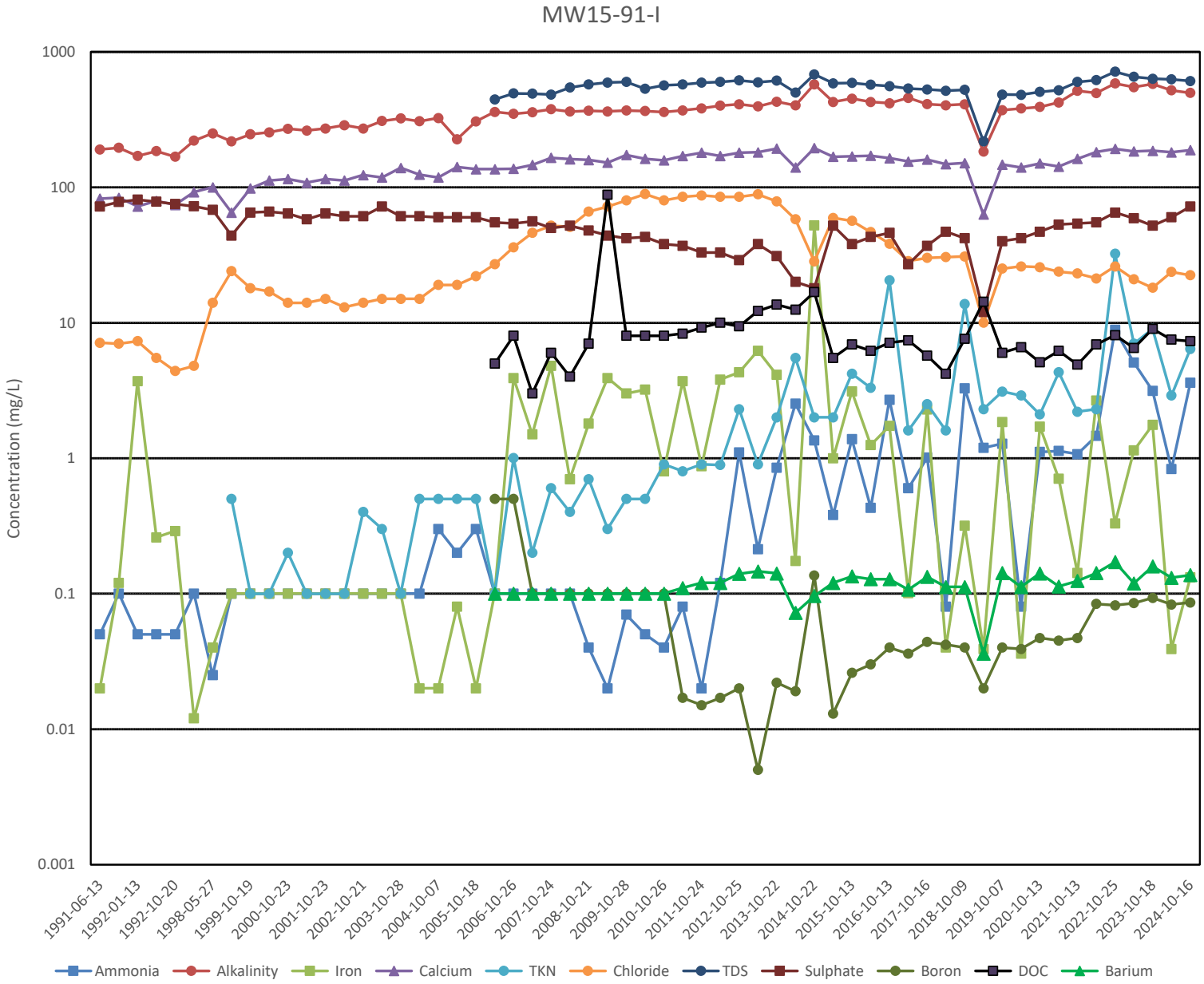
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium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Concentration (mg/L)
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0.001
1991-06-13
1992-01-13
1992-10-20
1998-05-27
1999-10-19
2000-10-23
2001-10-23
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2023-10-18
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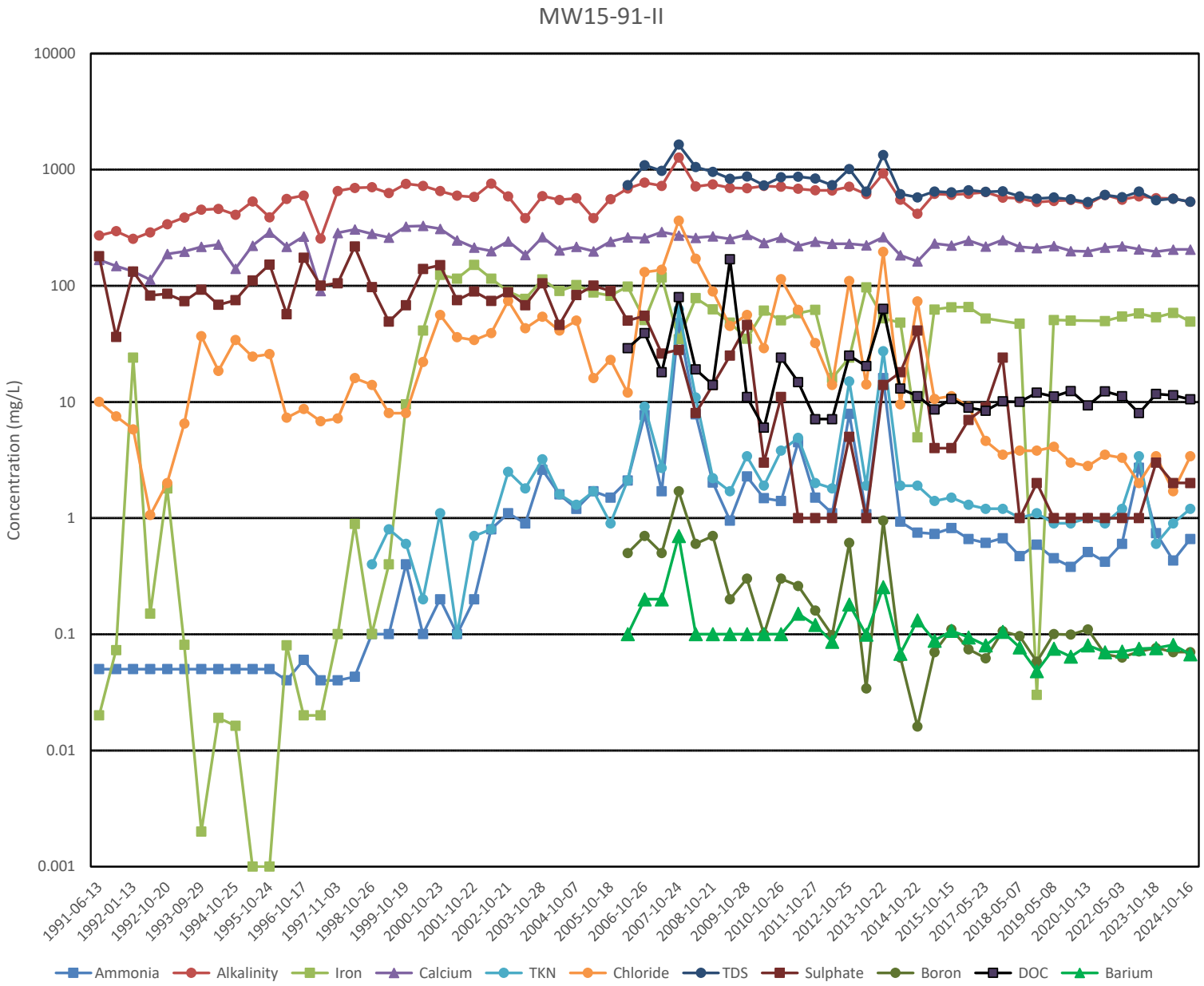
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium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Concentration (mg/L)
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0.01
0.001
1991-06-13
1992-01-13
1992-10-20
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1995-10-24
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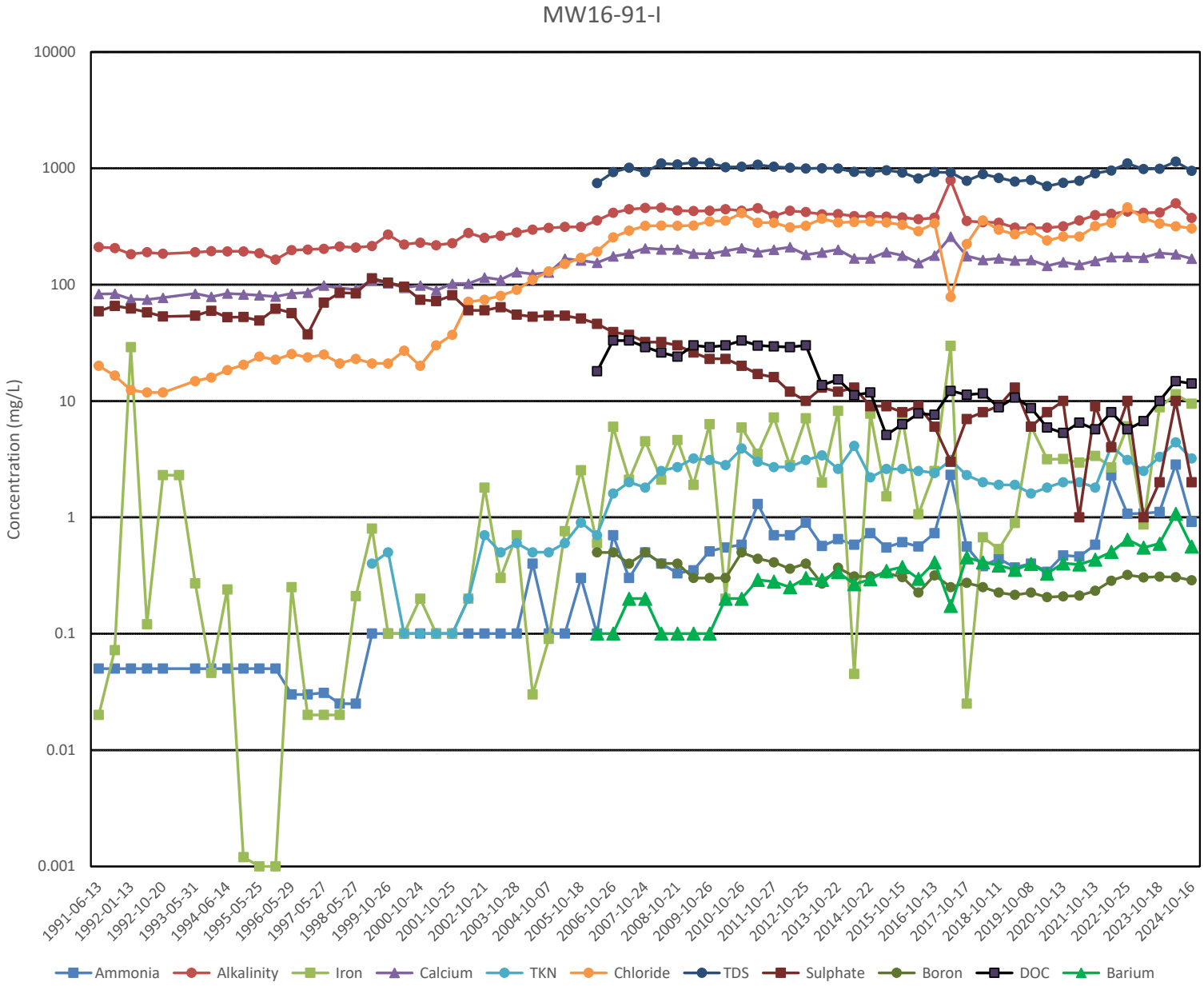
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium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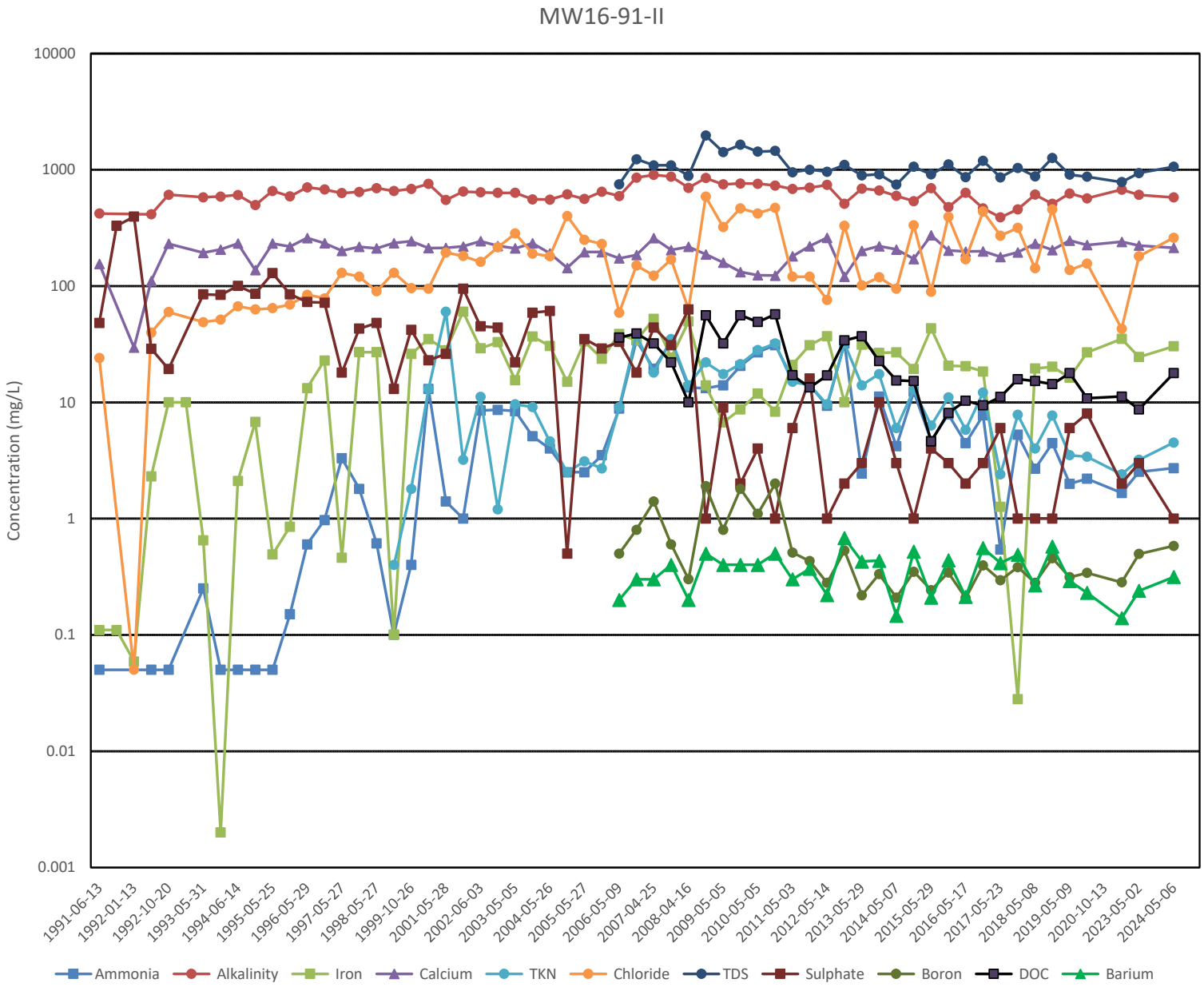
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium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Concentration (mg/L)
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0.01
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1991-06-13
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Alkalinity
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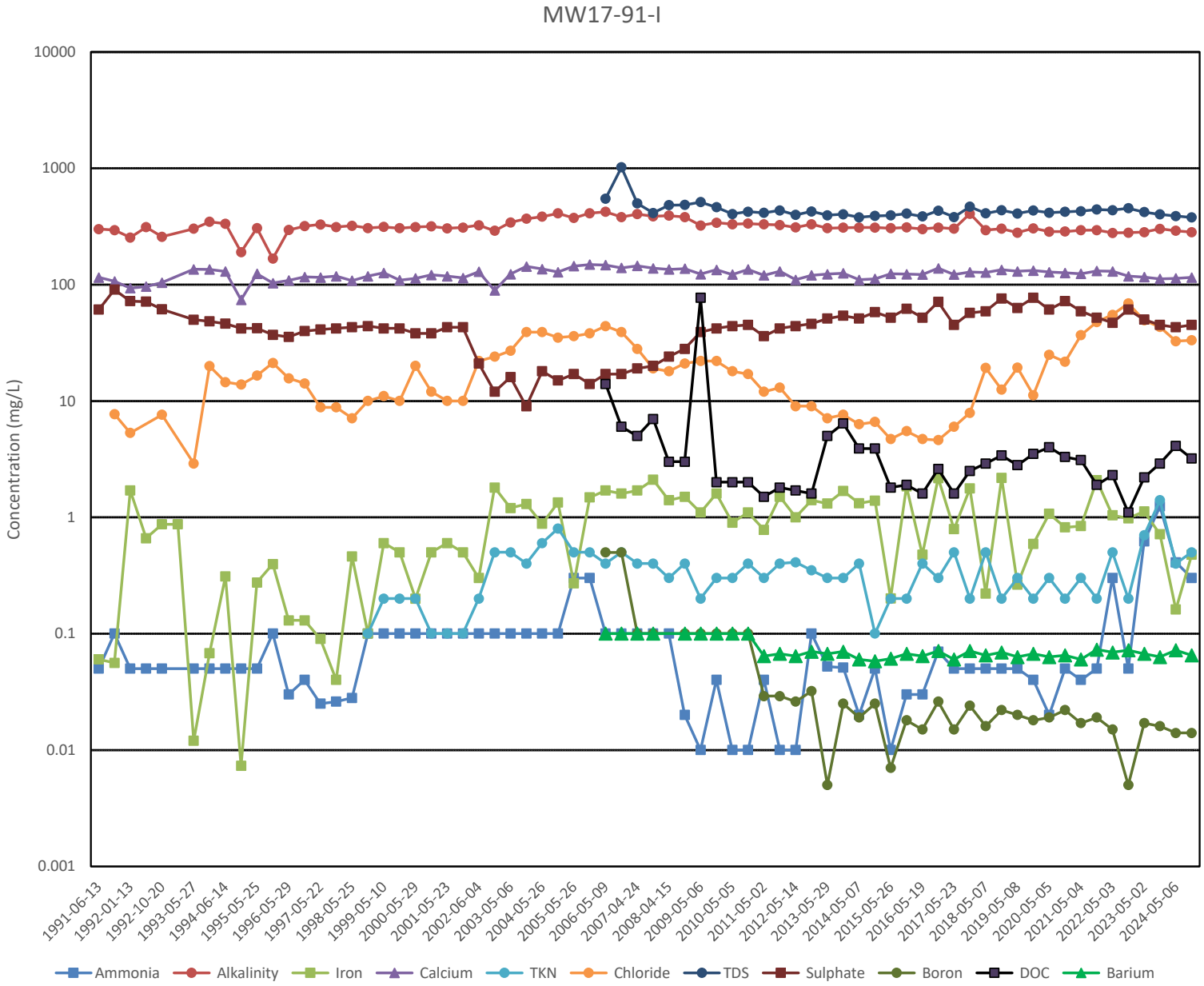
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW17-91-I
Concentration (mg/L)
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0.01
0.001
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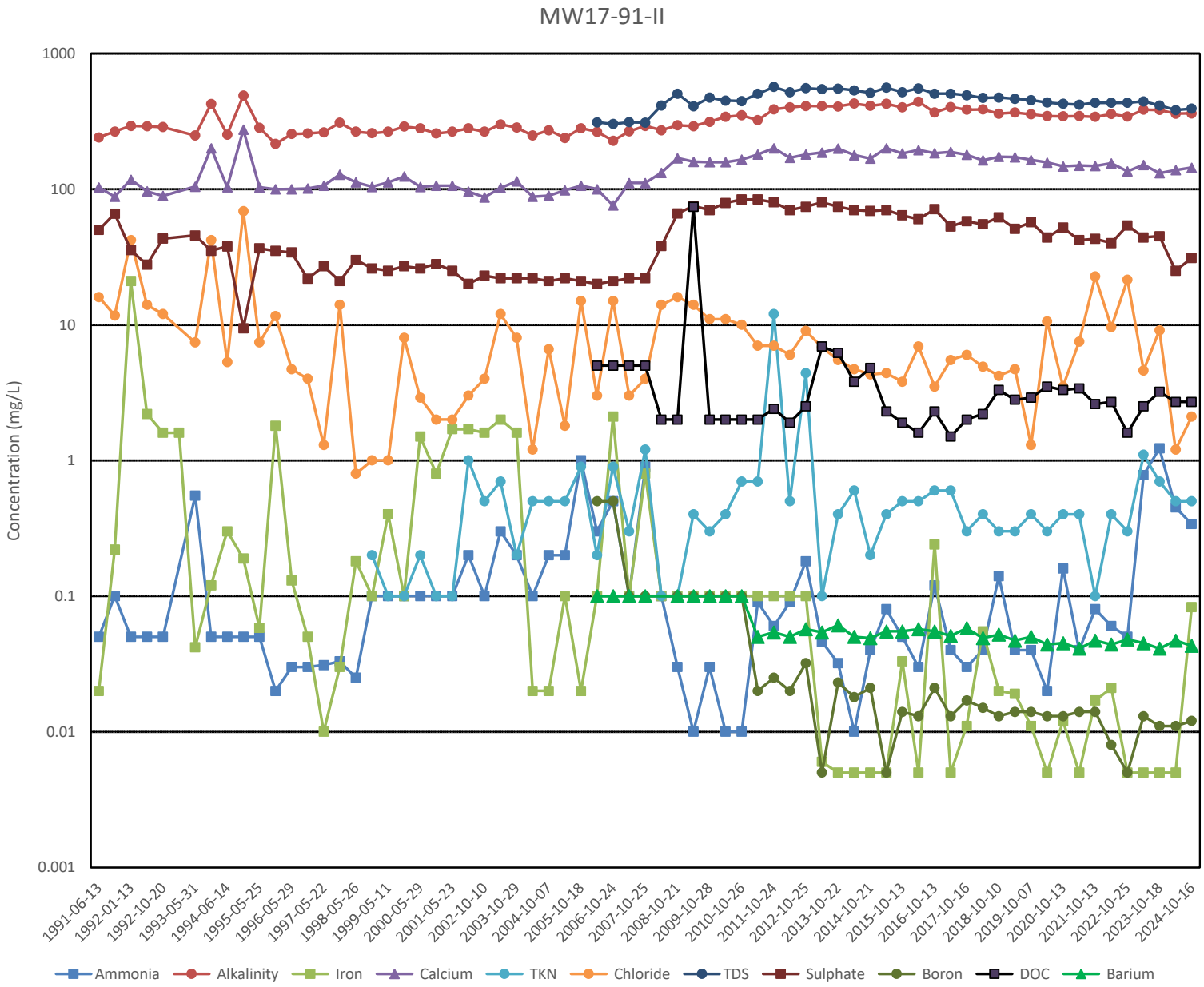
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW17-91-II
Concentration (mg/L)
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0.01
0.001
1991-06-13
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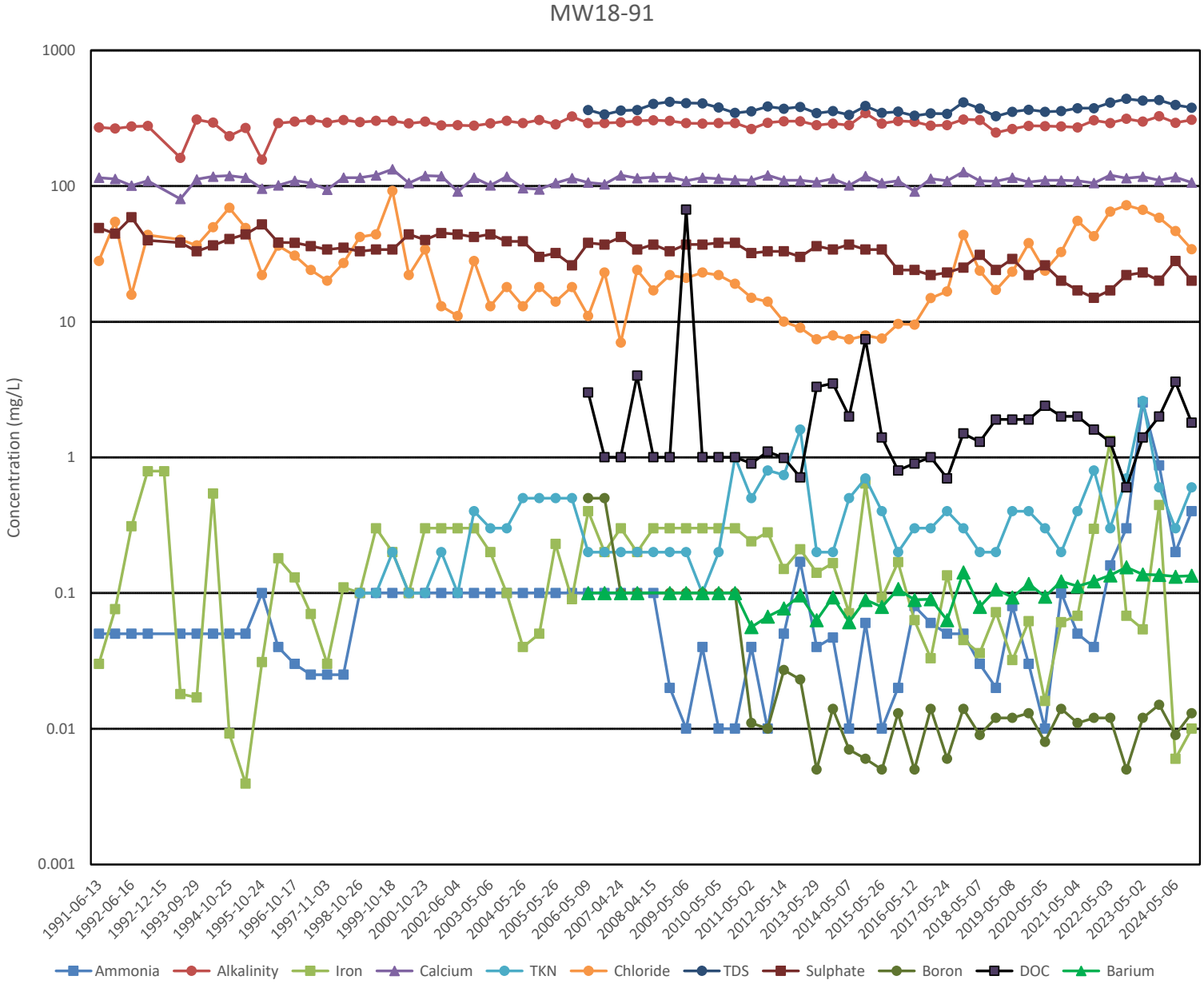
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW18-91
Concentration (mg/L)
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0.01
0.001
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Iron
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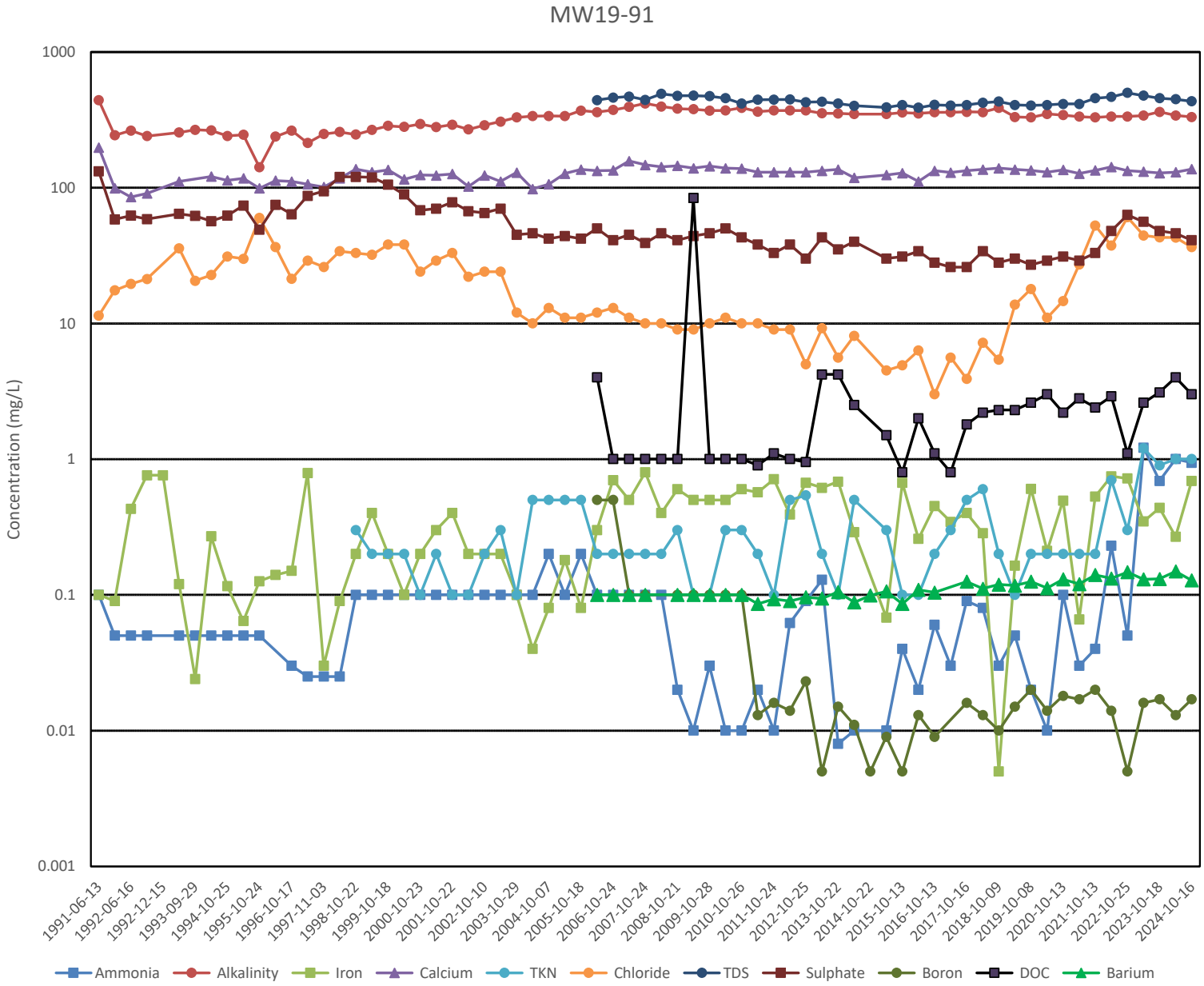
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW19-91
Concentration (mg/L)
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0.1
0.01
0.001
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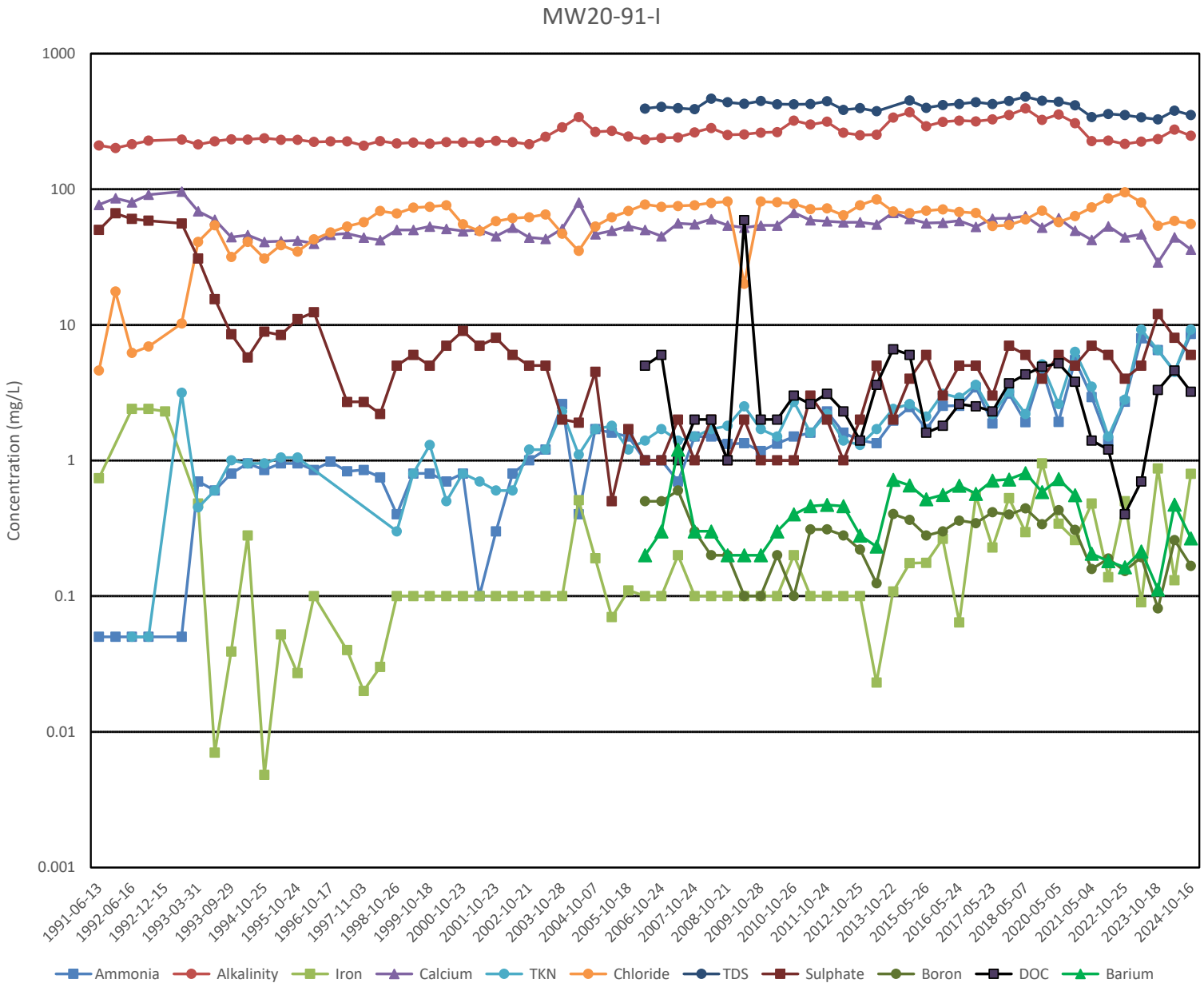
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW20-91-I
Concentration (mg/L)
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0.1
0.01
0.001
1991-06-13
1992-06-16
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1993-03-31
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Boron
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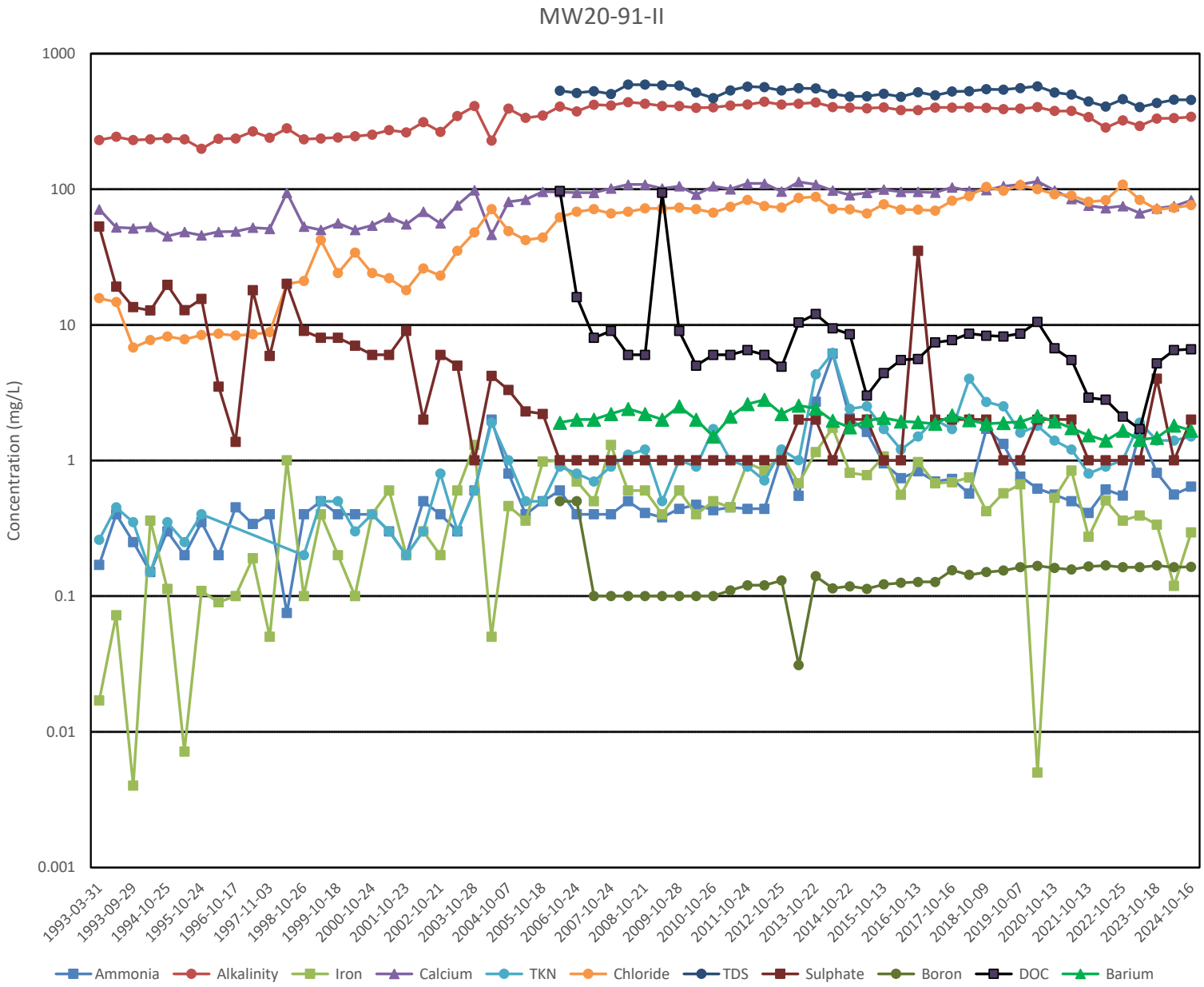
Barium


MW20-91-II
Concentration (mg/L)
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100
10
1
0.1
0.01
0.001
1993-03-31
1993-09-29
1994-10-25
1995-10-24
1996-10-17
1997-11-03
1998-10-26
1999-10-18
2000-10-24
2001-10-23
2002-10-21
2003-10-28
2004-10-07
2005-10-18
2006-10-24
2007-10-24
2008-10-21
2009-10-28
2010-10-26
2011-10-24
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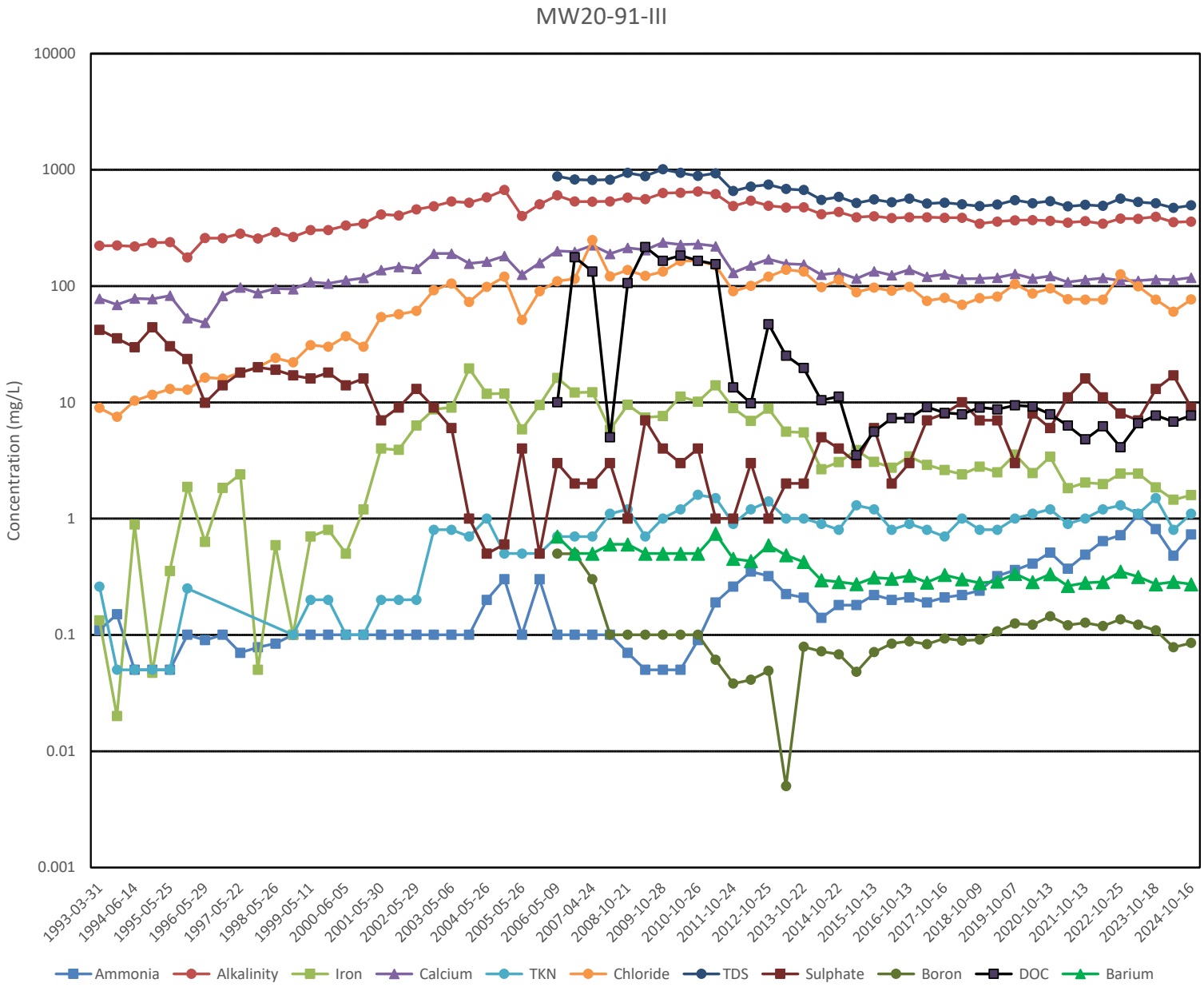
2017-10-16
2018-10-09
2019-10-07
2020-10-13
2021-10-13
2022-10-25
2023-10-18
2024-10-16
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW20-91-III
Concentration (mg/L)
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0.1
0.01
0.001
1993-03-31
1994-06-14
1995-05-25
1996-05-29
1997-05-22
1998-05-26
1999-05-11
2000-06-05
2001-05-30
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2004-05-26
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2017-10-16
2018-10-09
2019-10-07
2020-10-13
2021-10-13
2022-10-25
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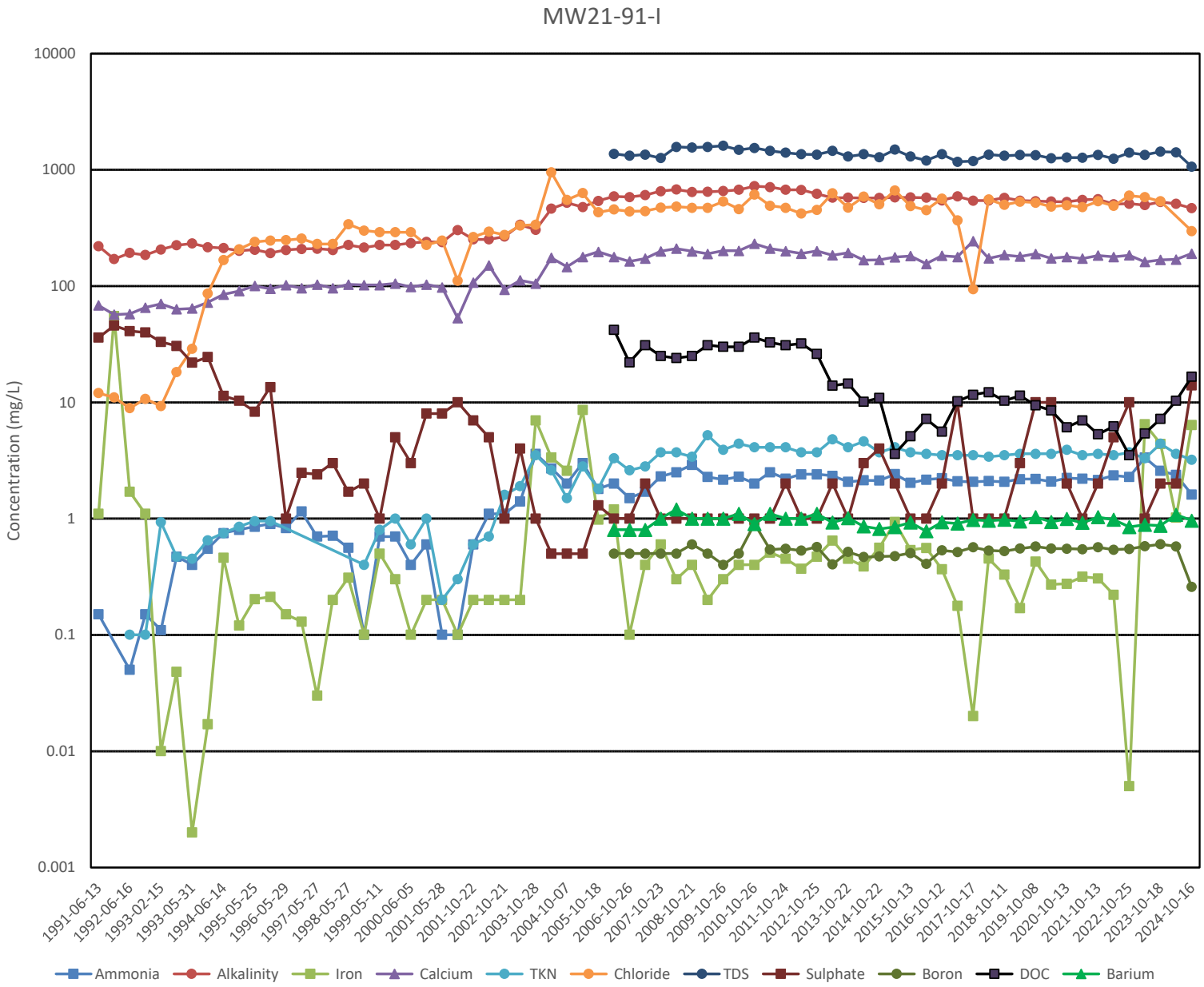
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW21-91-I
Concentration (mg/L)
10000
1000
100
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1
0.1
0.01
0.001
1991-06-13
1992-06-16
1993-02-15
1993-05-31
1994-06-14
1995-05-25
1996-05-29
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1998-05-27
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2017-10-17
2018-10-11
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2021-10-13
2022-10-25
2023-10-18
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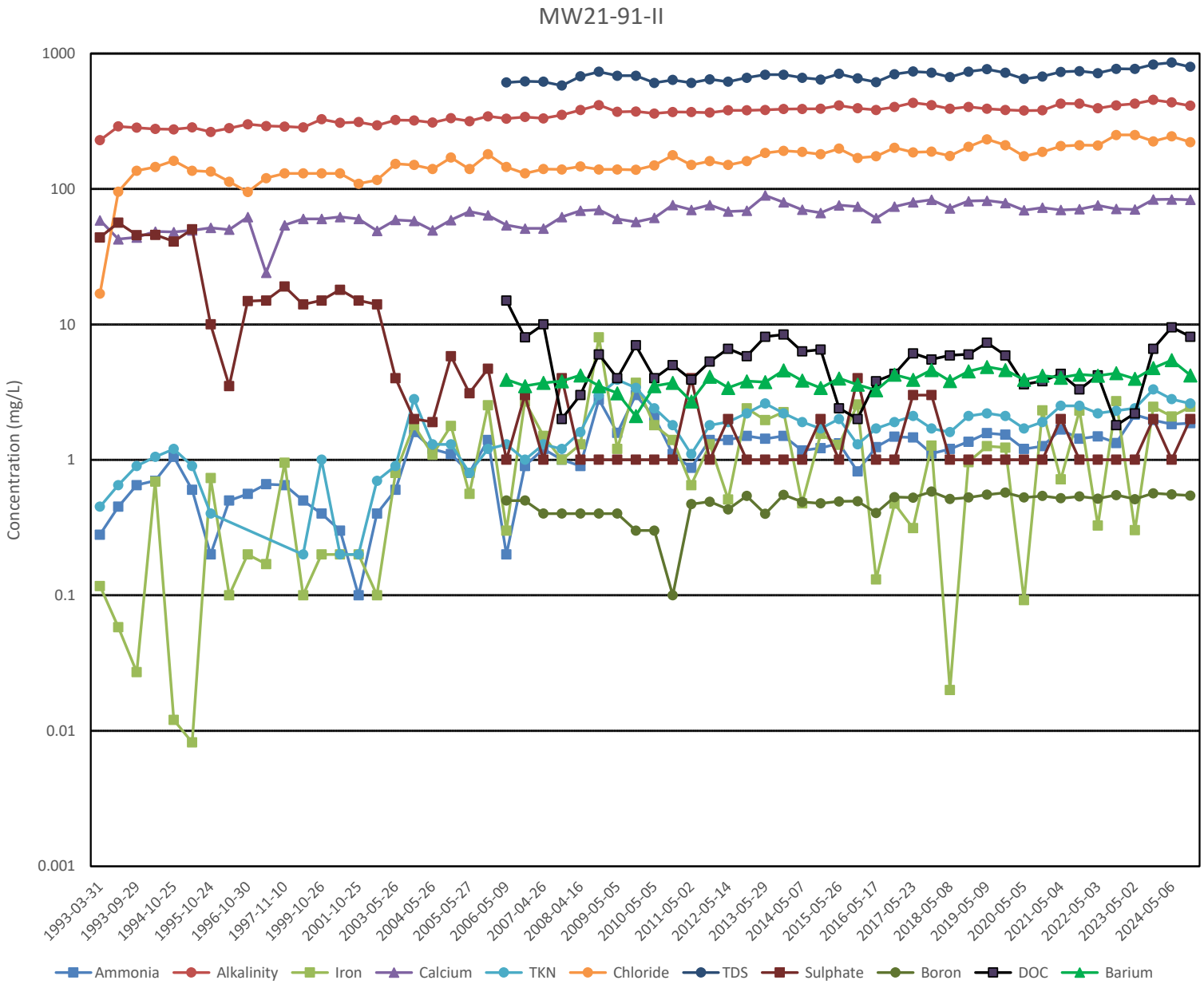
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW21-91-II
Concentration (mg/L)
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0.1
0.01
0.001
1993-03-31
1993-09-29
1994-10-25
1995-10-24
1996-10-30
1997-11-10
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2001-10-25
2003-05-26
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2021-05-04
2022-05-03
2023-05-02
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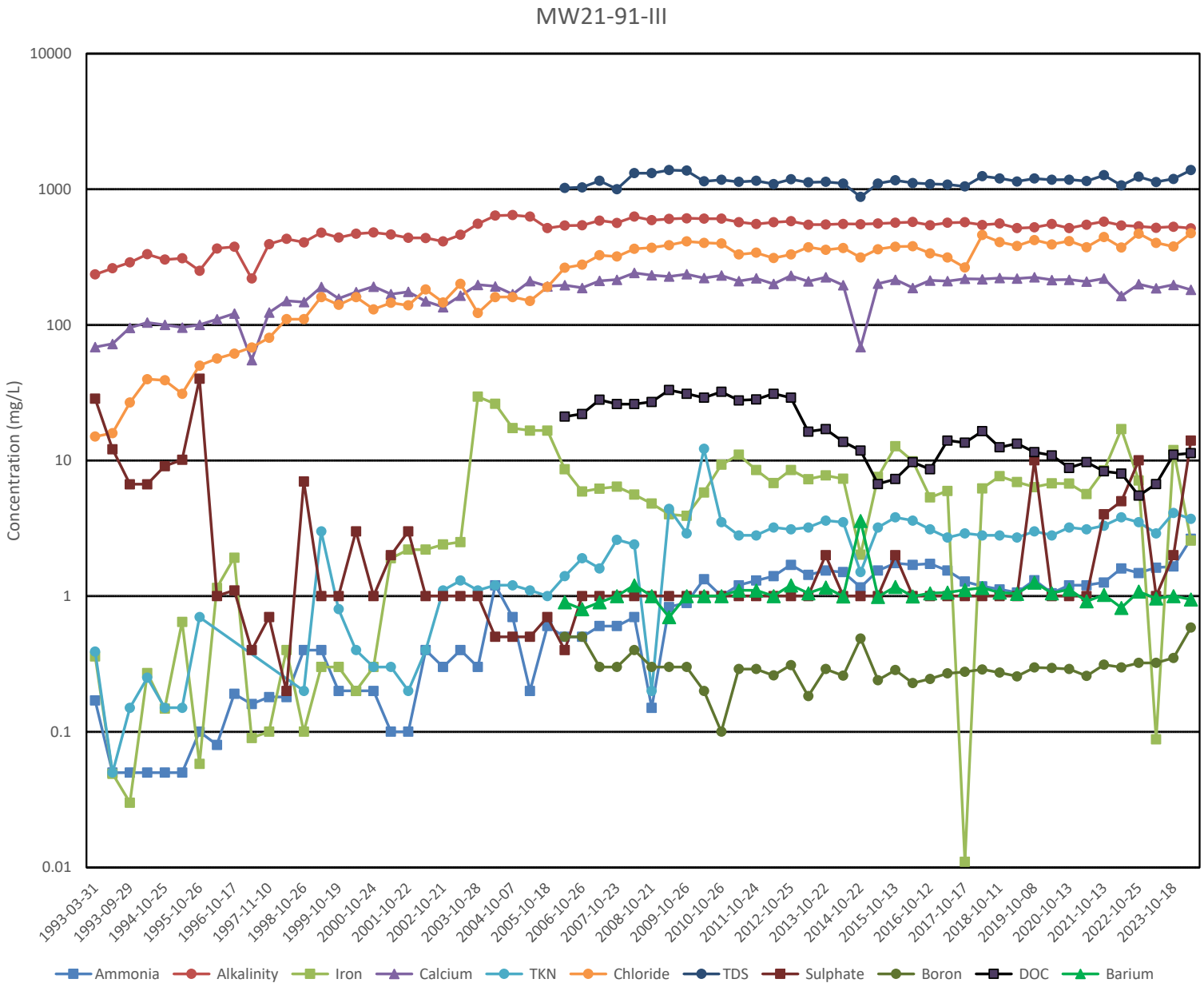
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW21-91-III
Concentration (mg/L)
10000
1000
100
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0.1
0.01
1993-03-31
1993-09-29
1994-10-25
1995-10-26
1996-10-17
1997-11-10
1998-10-26
1999-10-19
2000-10-24
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2014-10-22
2015-10-13
2016-10-12
2017-10-17
2018-10-11
2019-10-08
2020-10-13
2021-10-13
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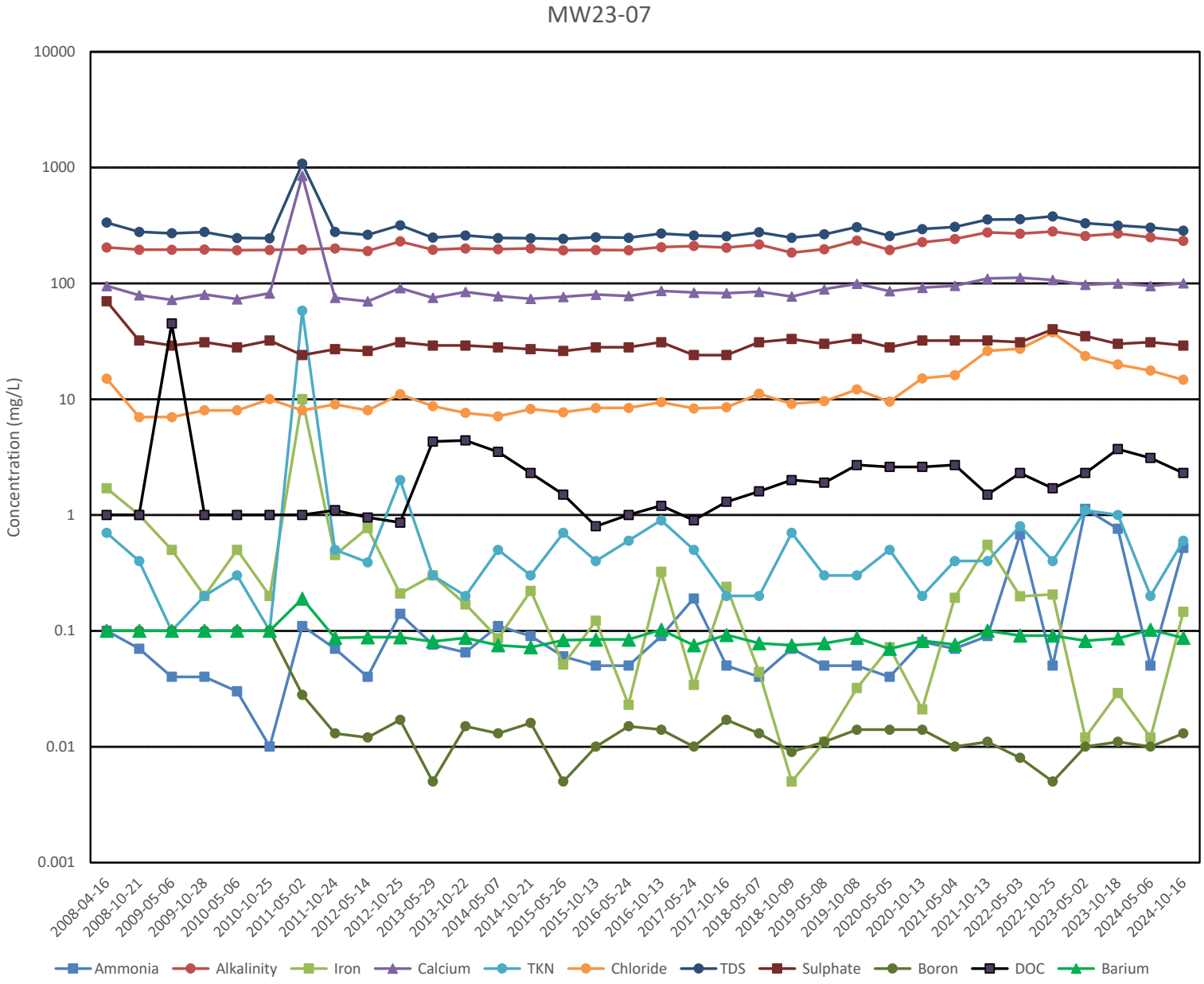
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW23-07
Concentration (mg/L)
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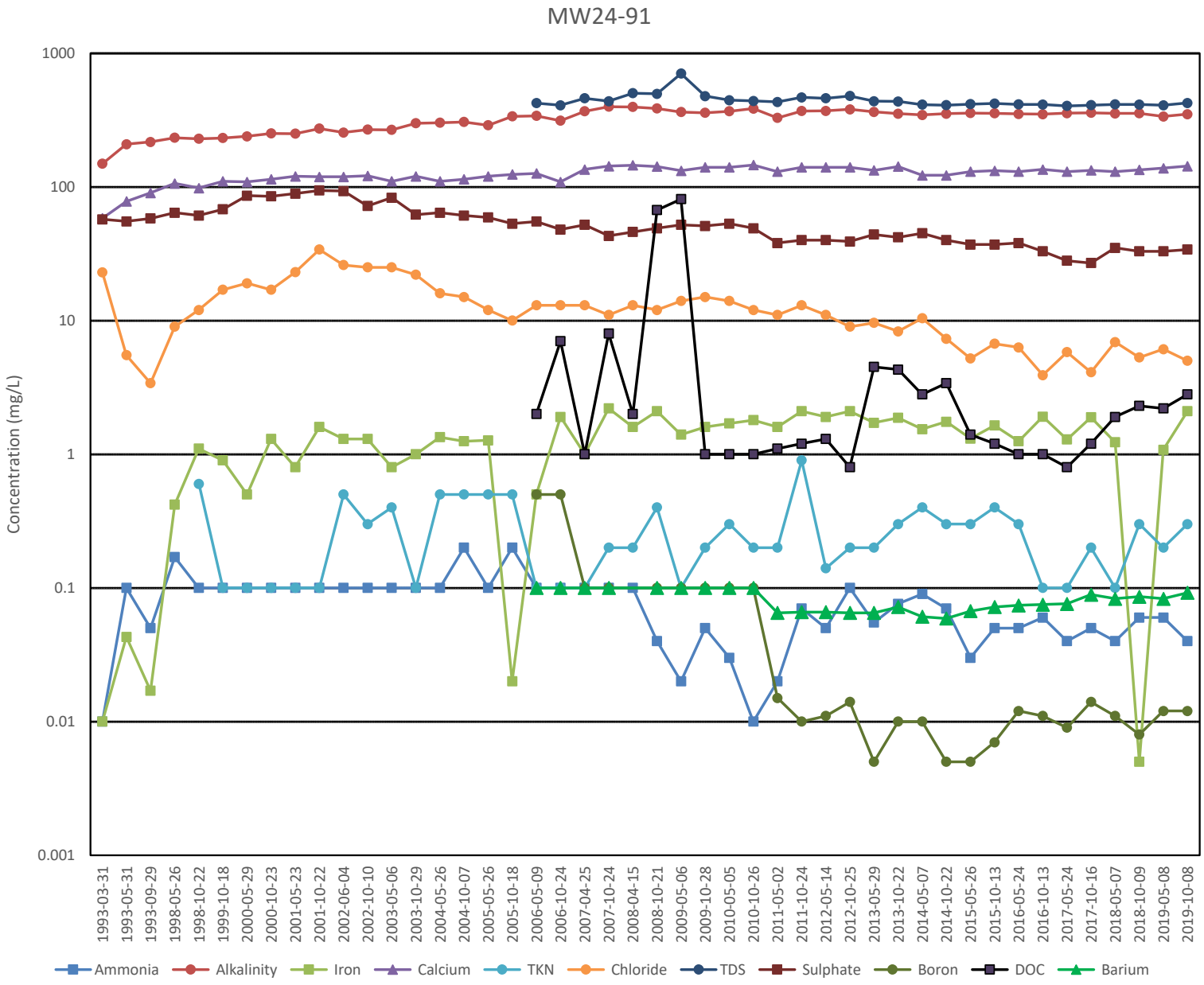
1000
100
10
1
0.1
0.01
0.001
2008-04-16
2008-10-21
2009-05-06
2009-10-28
2010-05-06
2010-10-25
2011-05-02
2011-10-24
2012-05-14
2012-10-25
2013-05-29
2013-10-22
2014-05-07
2014-10-21
2015-05-26
2015-10-13
2016-05-24
2016-10-13
2017-05-24
2017-10-16
2018-05-07
2018-10-09
2019-05-08
2019-10-08
2020-05-05
2020-10-13
2021-05-04
2021-10-13
2022-05-03
2022-10-25
2023-05-02
2023-10-18
2024-05-06
2024-10-16
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW24-91
Concentration (mg/L)
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100
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1
0.1
0.01
0.001
1993-03-31
1993-05-31
1993-09-29
1998-05-26
1998-10-22
1999-10-18
2000-05-29
2000-10-23
2001-05-23
2001-10-22
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2017-05-24
2017-10-16
2018-05-07
2018-10-09
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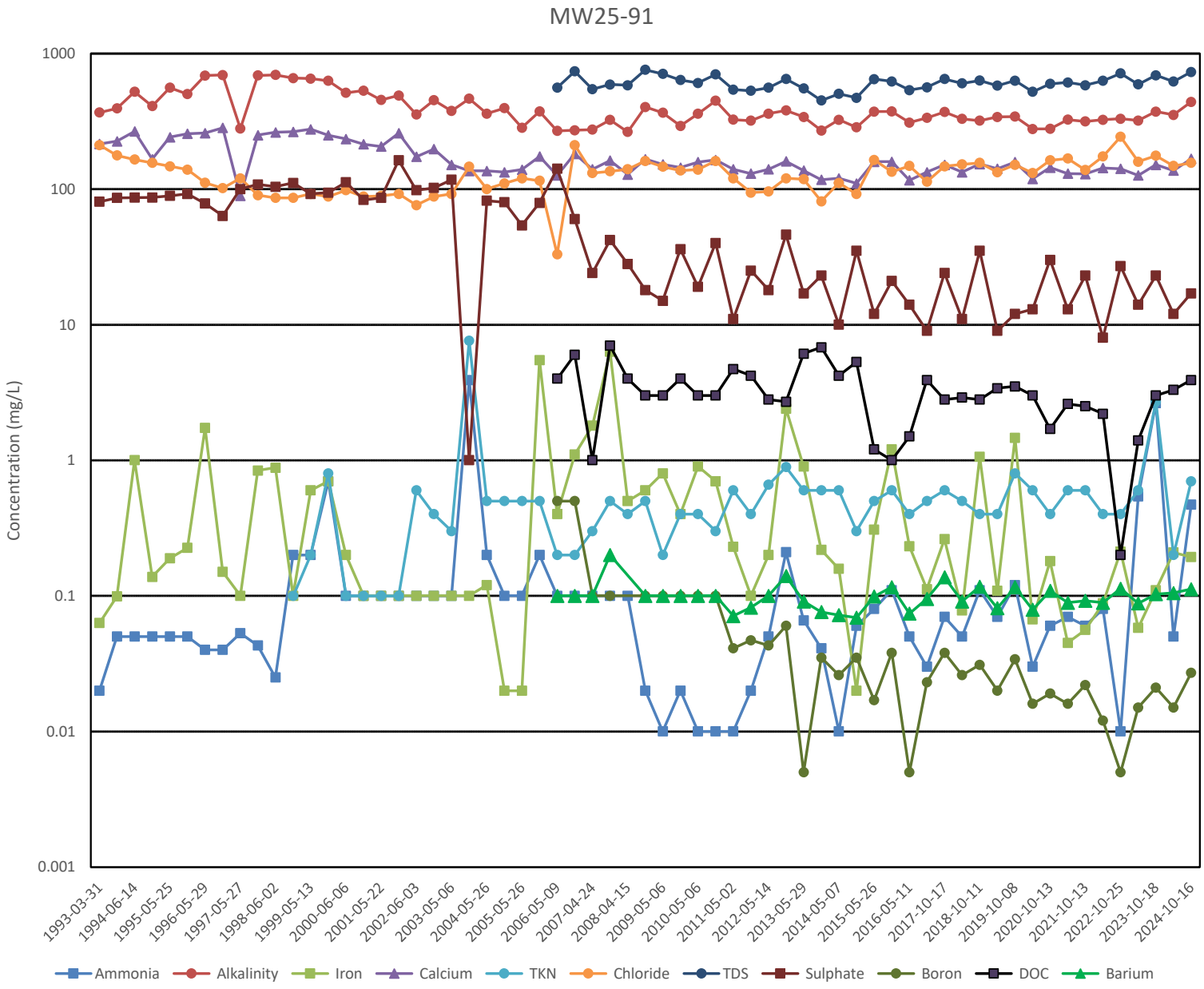
2019-10-08
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW25-91
Concentration (mg/L)
1000
100
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1
0.1
0.01
0.001
1993-03-31
1994-06-14
1995-05-25
1996-05-29
1997-05-27
1998-06-02
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2000-06-06
2001-05-22
2002-06-03
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2022-10-25
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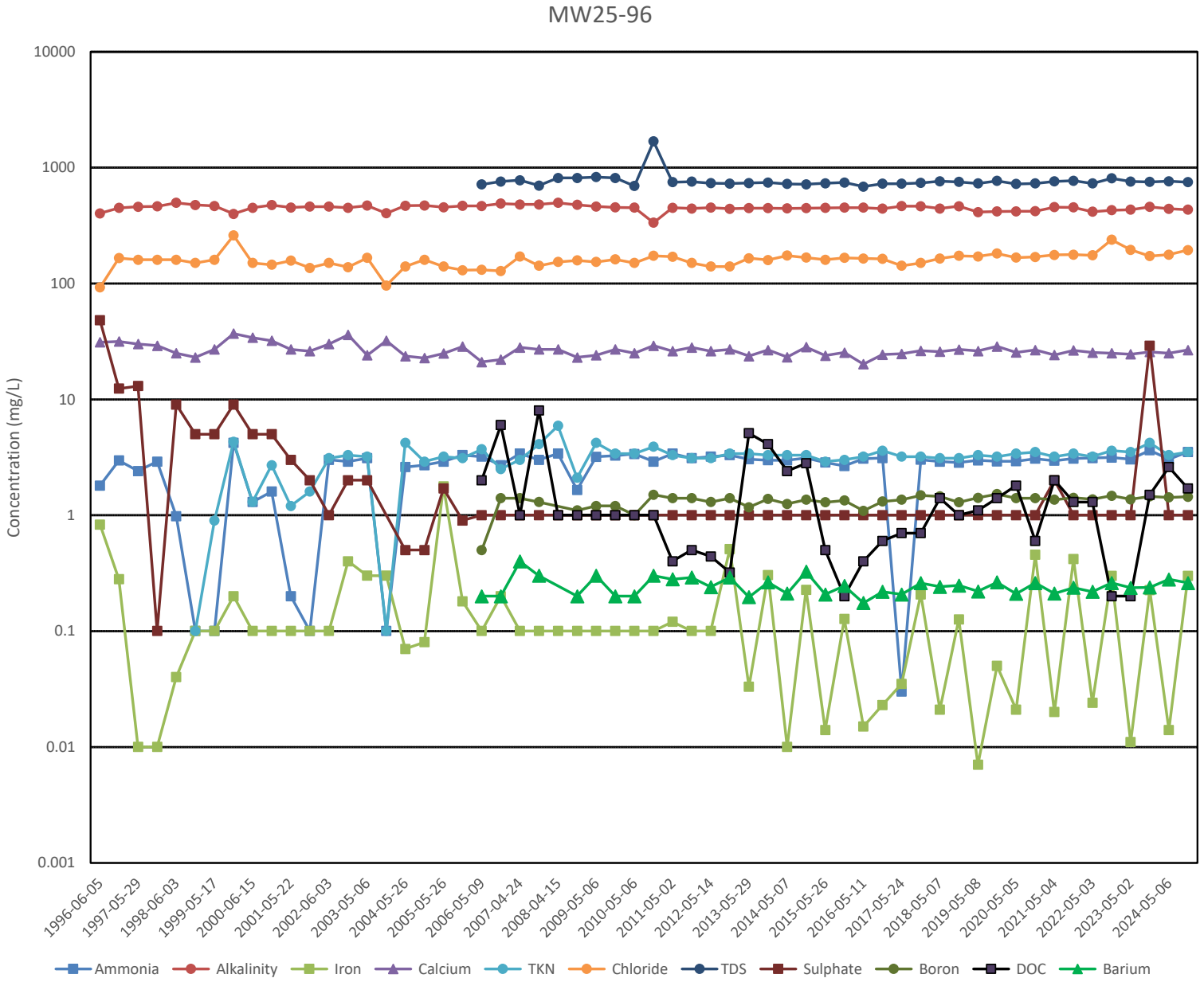
2024-10-16
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW25-96
Concentration (mg/L)
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0.01
0.001
1996-06-05
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2002-06-03
2003-05-06
2004-05-26
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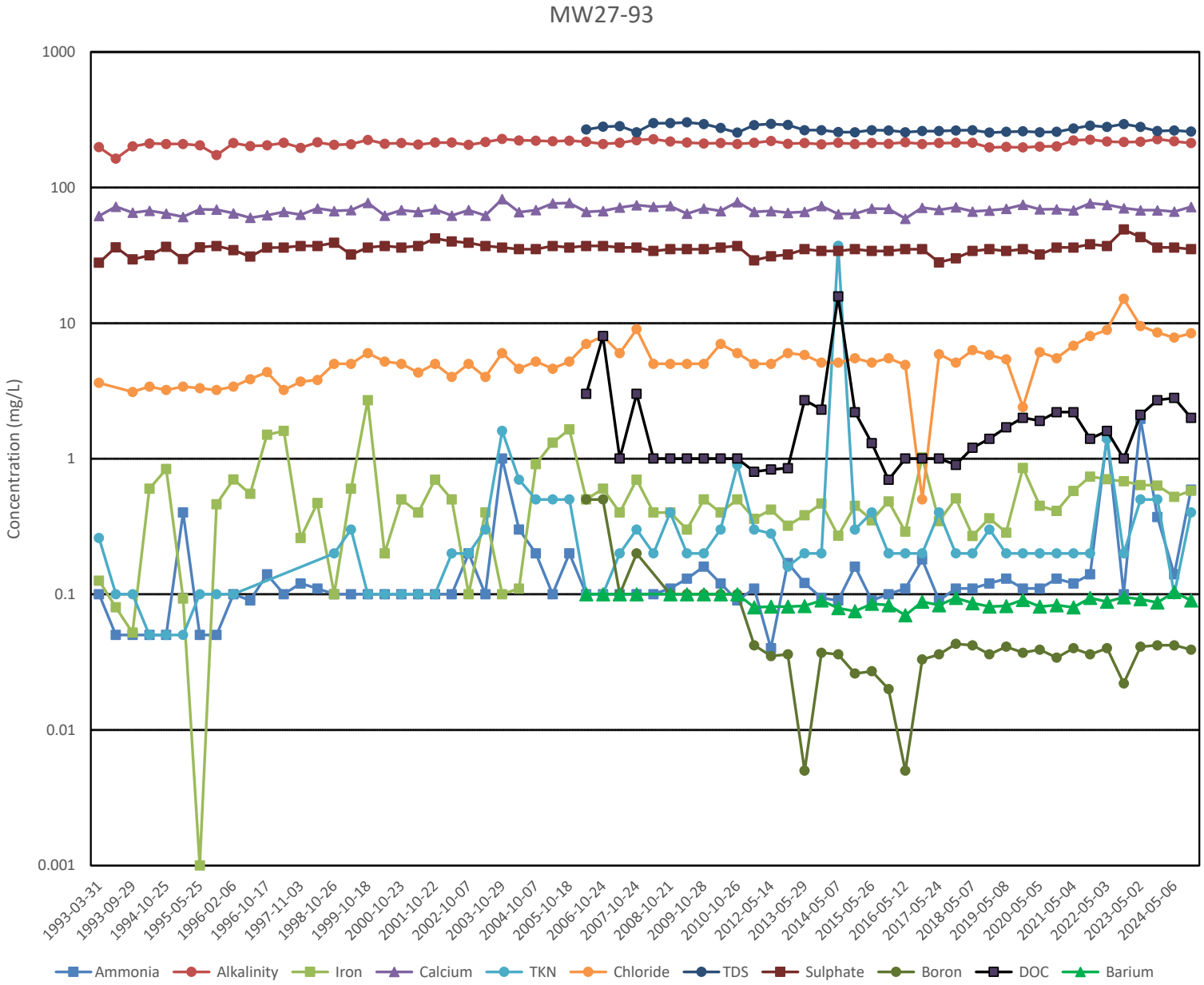
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW27-93
Concentration (mg/L)
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0.01
0.001
1993-03-31
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1994-10-25
1995-05-25
1996-02-06
1996-10-17
1997-11-03
1998-10-26
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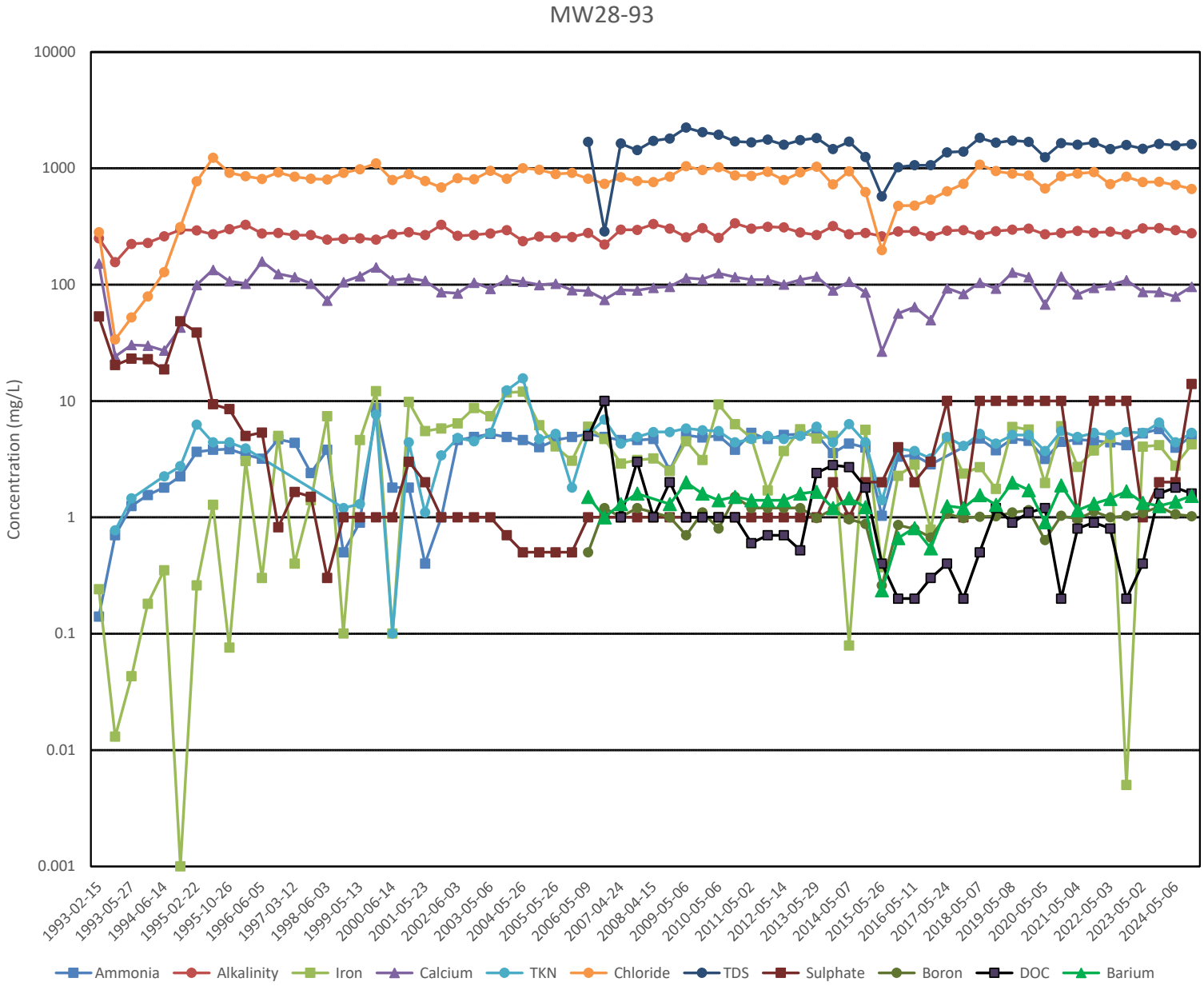
2019-05-08
2020-05-05
2021-05-04
2022-05-03
2023-05-02
2024-05-06
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW28-93
Concentration (mg/L)
10000
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10
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0.01
0.001
1993-02-15
1993-05-27
1994-06-14
1995-02-22
1995-10-26
1996-06-05
1997-03-12
1998-06-03
1999-05-13
2000-06-14
2001-05-23
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2005-05-26
2006-05-09
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2011-05-02
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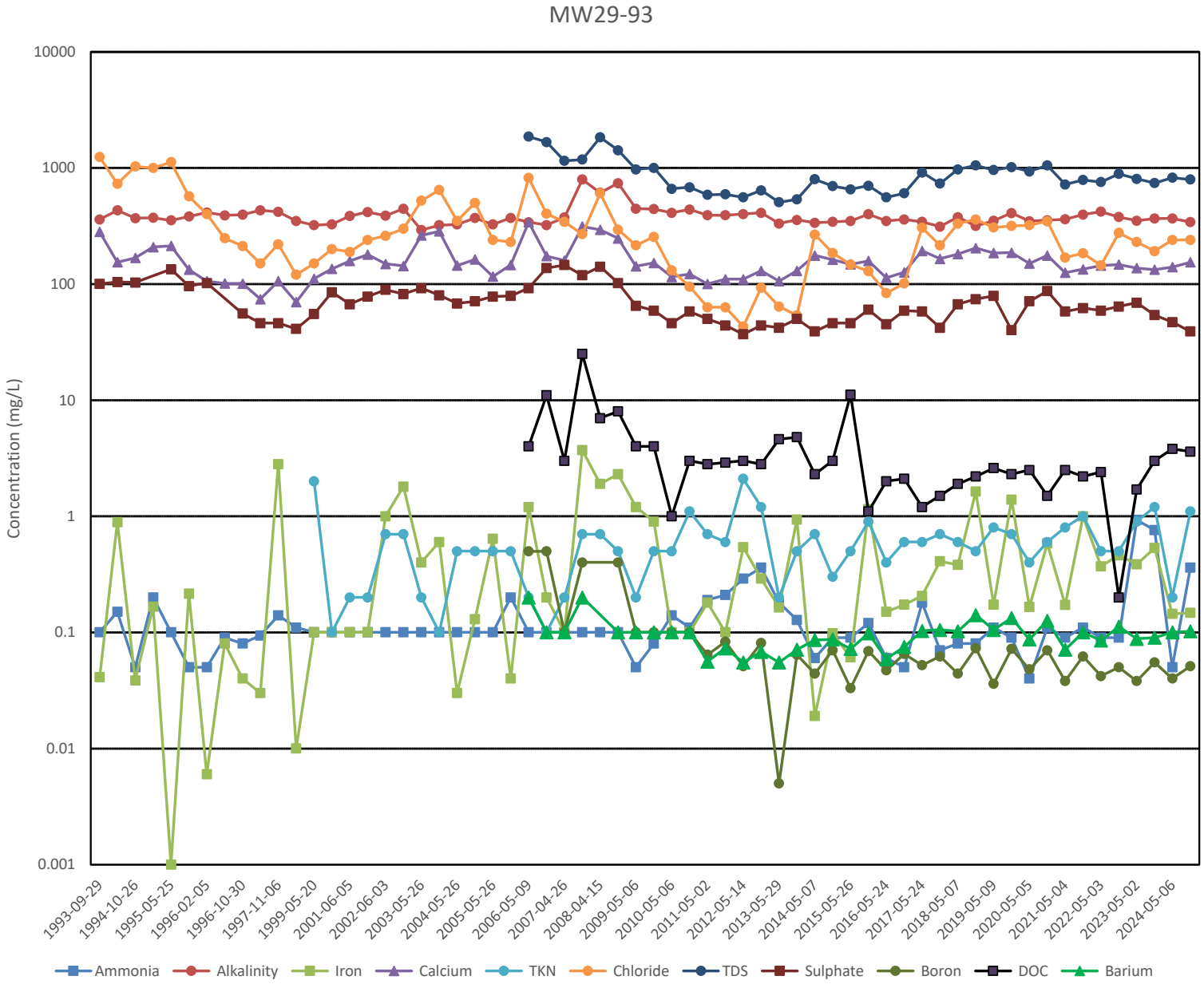
2018-05-07
2019-05-08
2020-05-05
2021-05-04
2022-05-03
2023-05-02
2024-05-06
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW29-93
Concentration (mg/L)
10000
1000
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0.01
0.001
1993-09-29
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1995-05-25
1996-02-05
1996-10-30
1997-11-06
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2002-06-03
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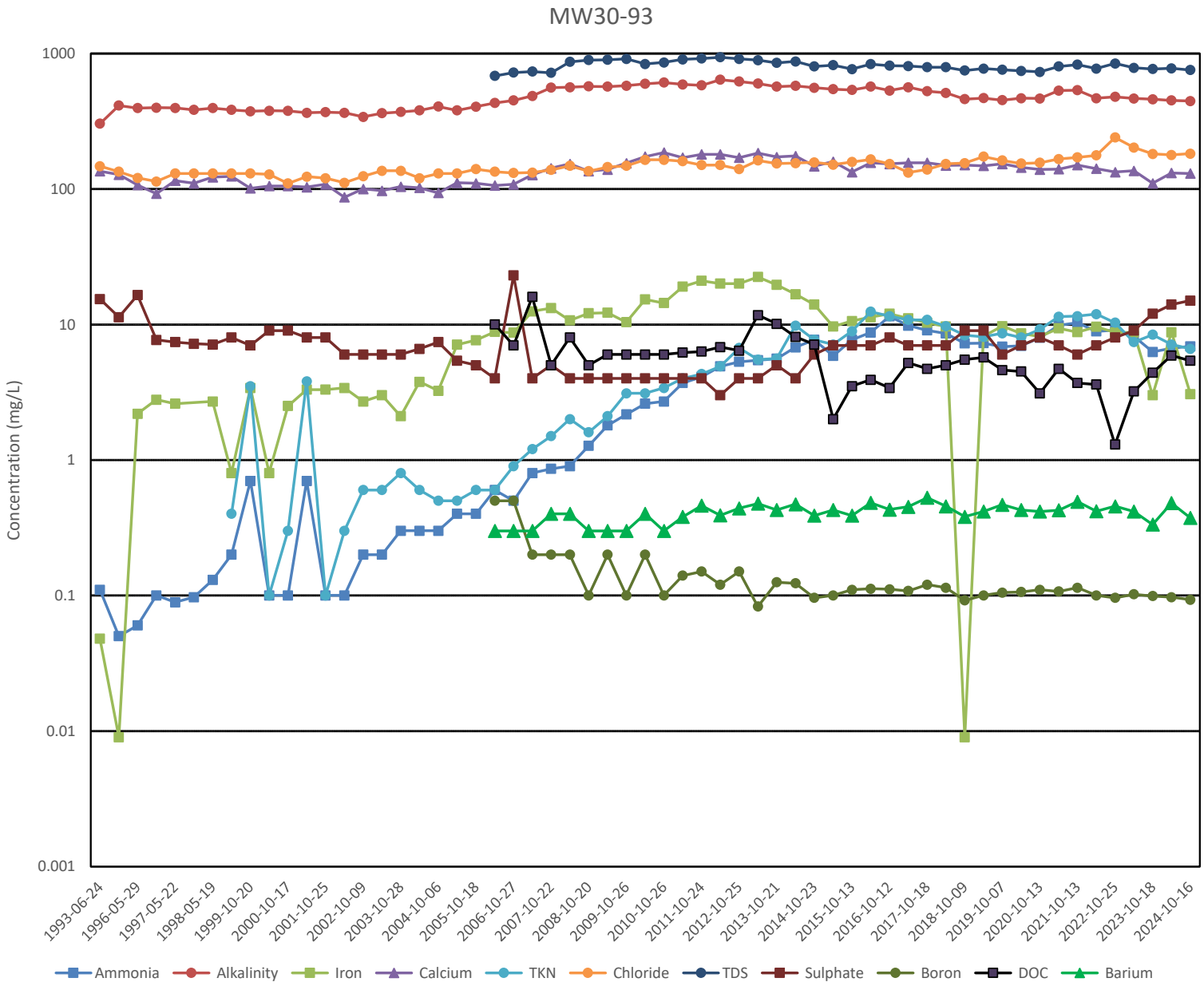
2023-05-02
2024-05-06
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW30-93
Concentration (mg/L)
1000
100
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0.01
0.001
1993-06-24
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1998-05-19
1999-10-20
2000-10-17
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2002-10-09
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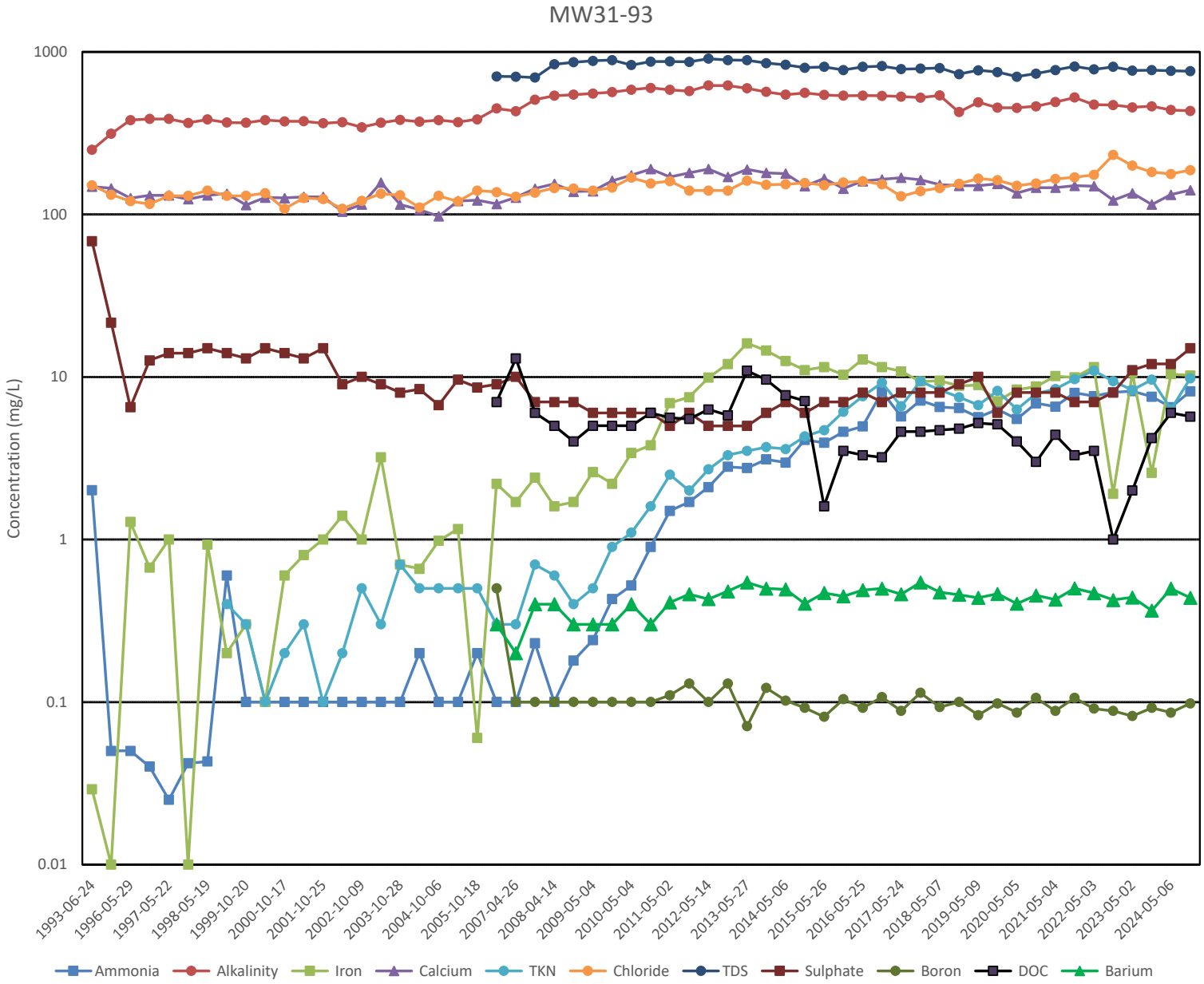
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW31-93
Concentration (mg/L)
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100
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0.01
1993-06-24
1996-05-29
1997-05-22
1998-05-19
1999-10-20
2000-10-17
2001-10-25
2002-10-09
2003-10-28
2004-10-06
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2007-04-26
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2010-05-04
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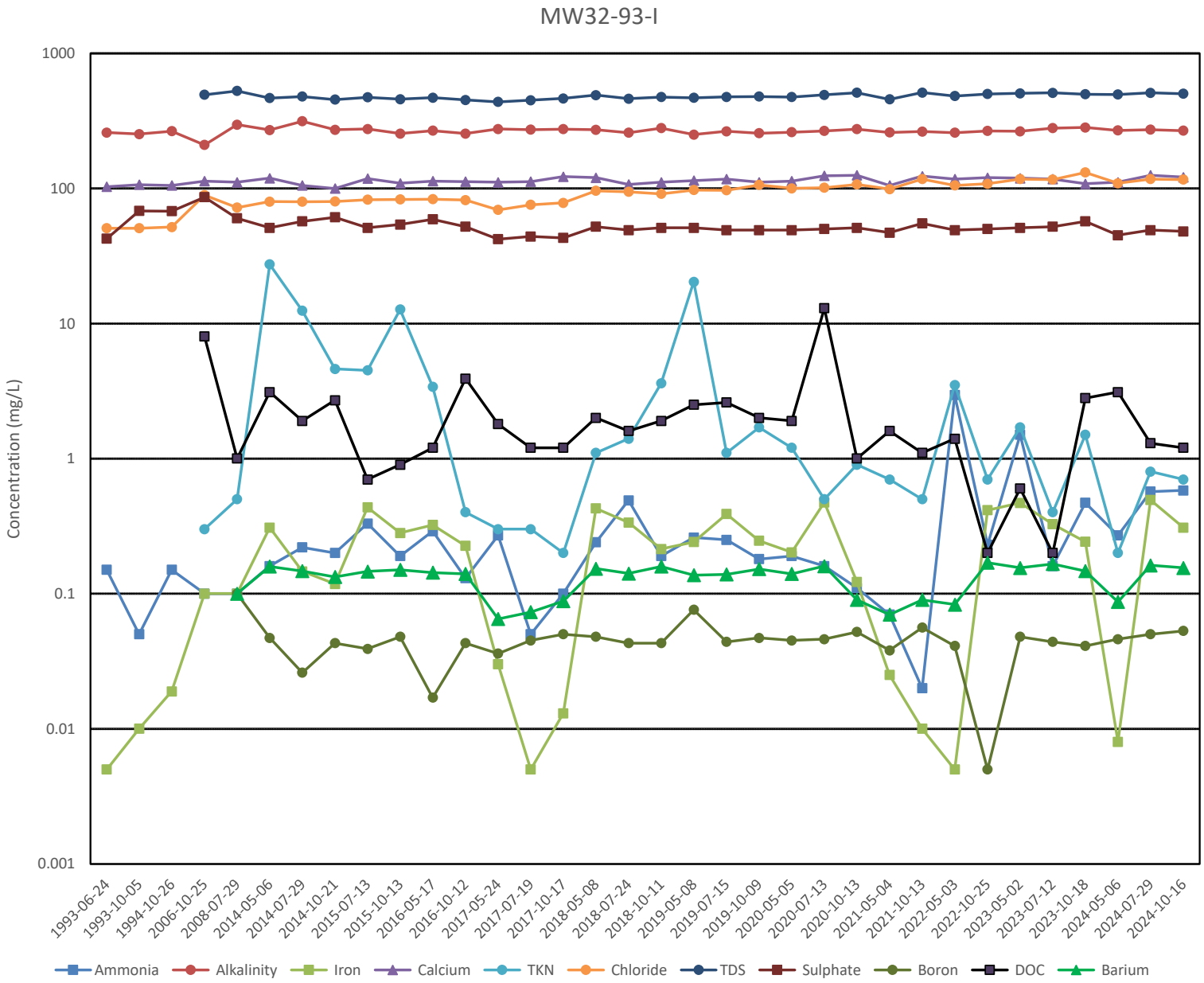
2023-05-02
2024-05-06
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW32-93-I
Concentration (mg/L)
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0.01
0.001
1993-06-24
1993-10-05
1994-10-26
2006-10-25
2008-07-29
2014-05-06
2014-07-29
2014-10-21
2015-07-13
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2024-07-29
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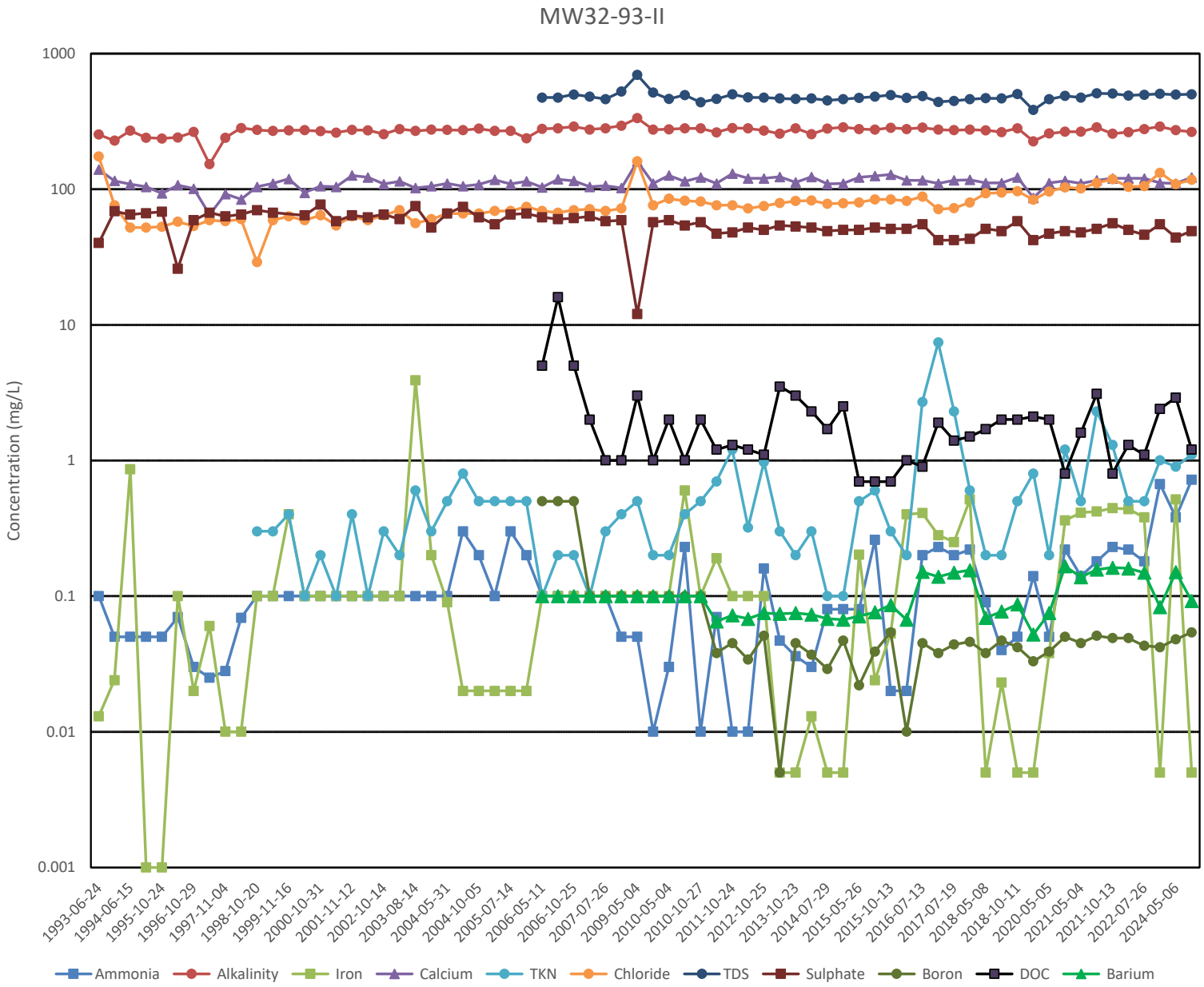
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW32-93-II
Concentration (mg/L)
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0.1
0.01
0.001
1993-06-24
1994-06-15
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1996-10-29
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1998-10-20
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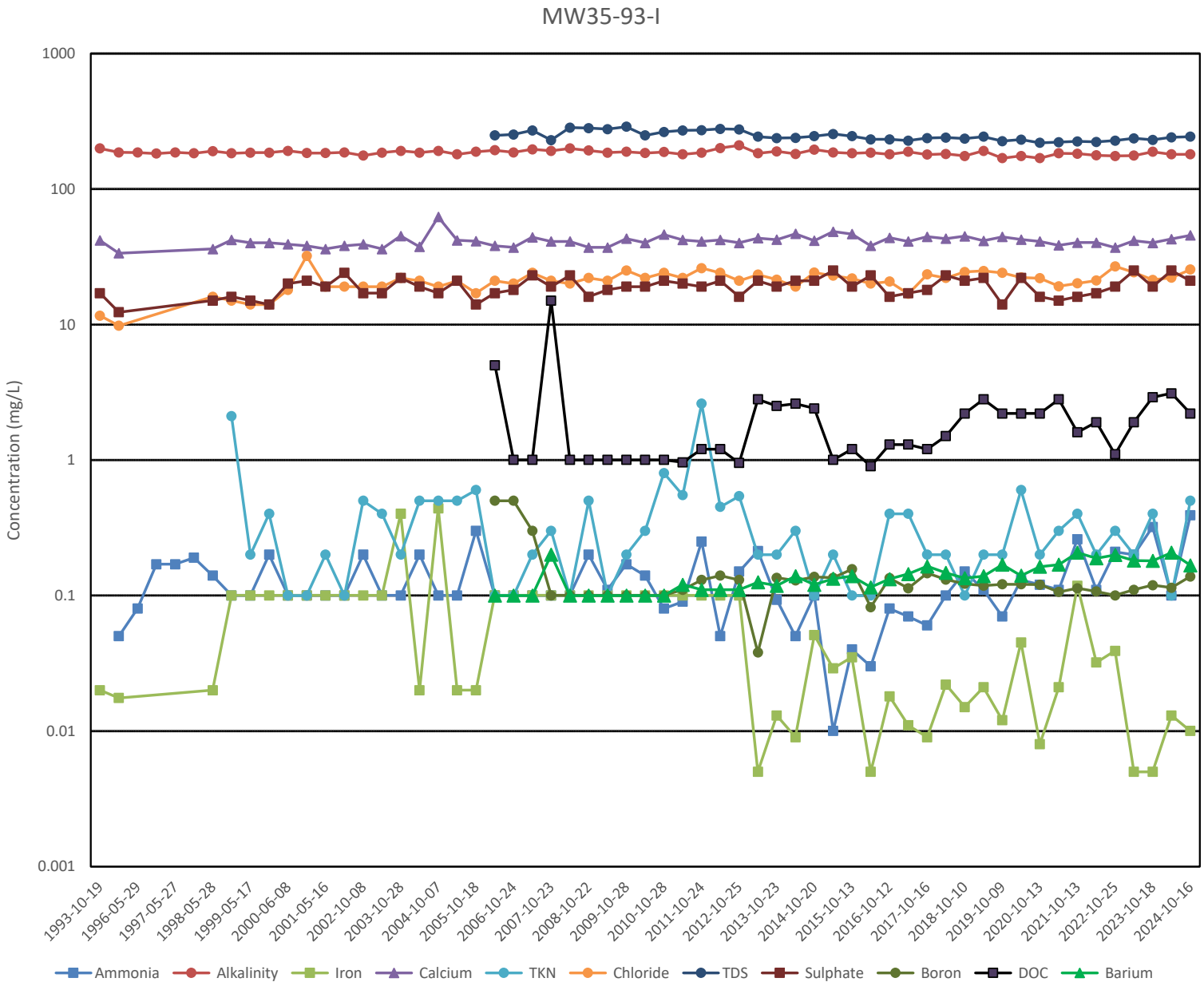
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW35-93-I
Concentration (mg/L)
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0.1
0.01
0.001
1993-10-19
1996-05-29
1997-05-27
1998-05-28
1999-05-17
2000-06-08
2001-05-16
2002-10-08
2003-10-28
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2023-10-18
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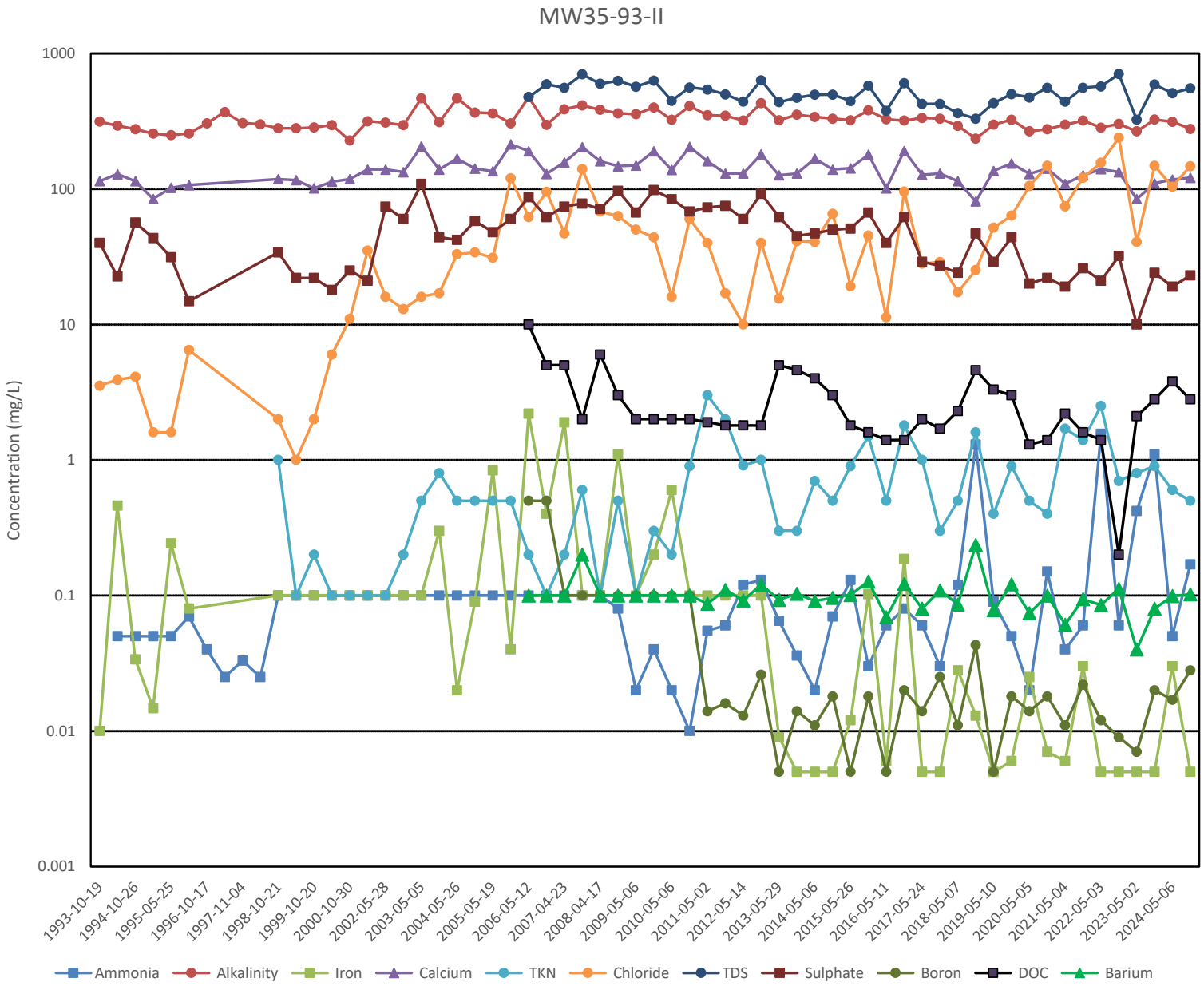
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW35-93-II
Concentration (mg/L)
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0.1
0.01
0.001
1993-10-19
1994-10-26
1995-05-25
1996-10-17
1997-11-04
1998-10-21
1999-10-20
2000-10-30
2002-05-28
2003-05-05
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2005-05-19
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2011-05-02
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2017-05-24
2018-05-07
2019-05-10
2020-05-05
2021-05-04
2022-05-03
2023-05-02
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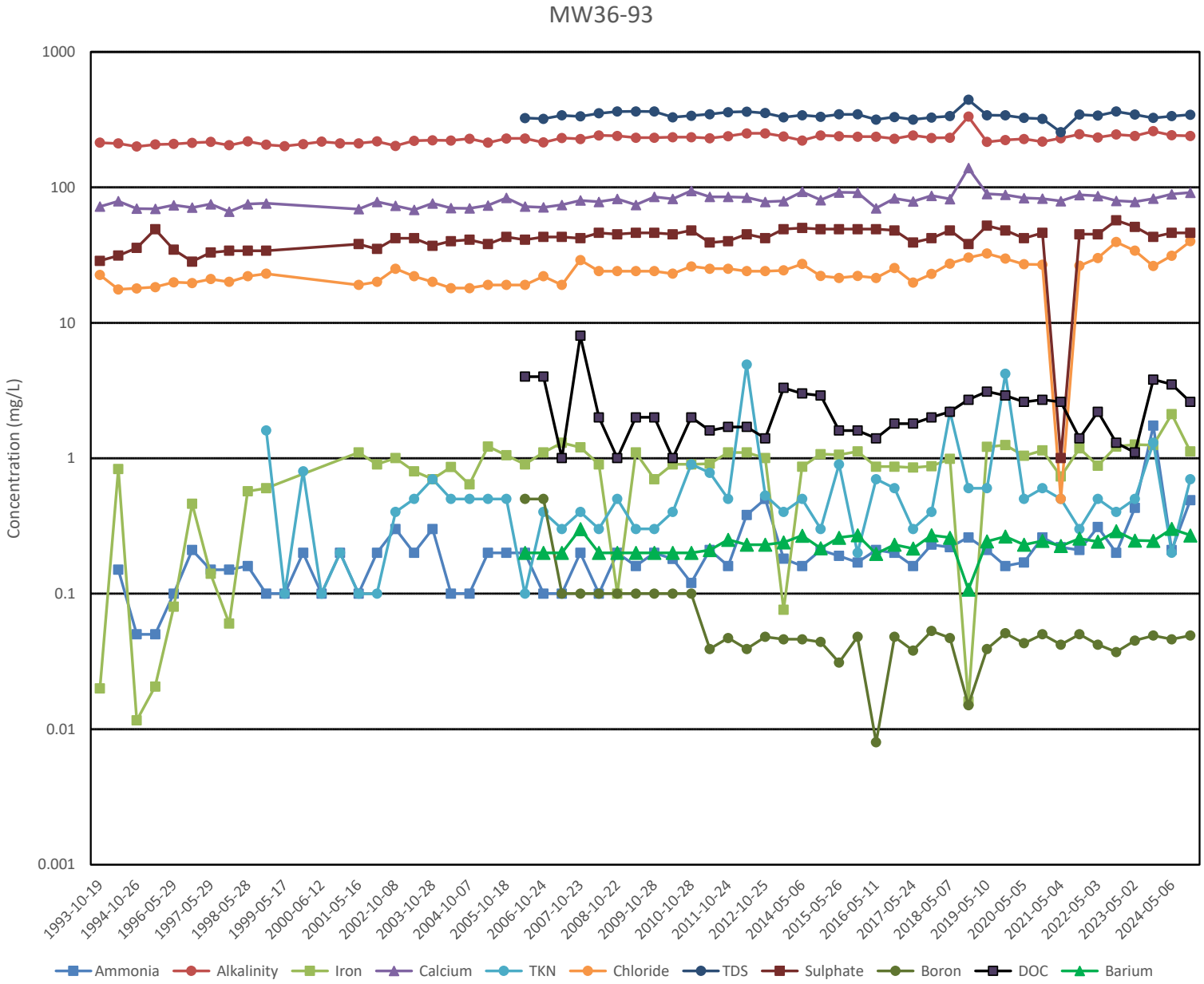
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW36-93
Concentration (mg/L)
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0.01
0.001
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2017-05-24
2018-05-07
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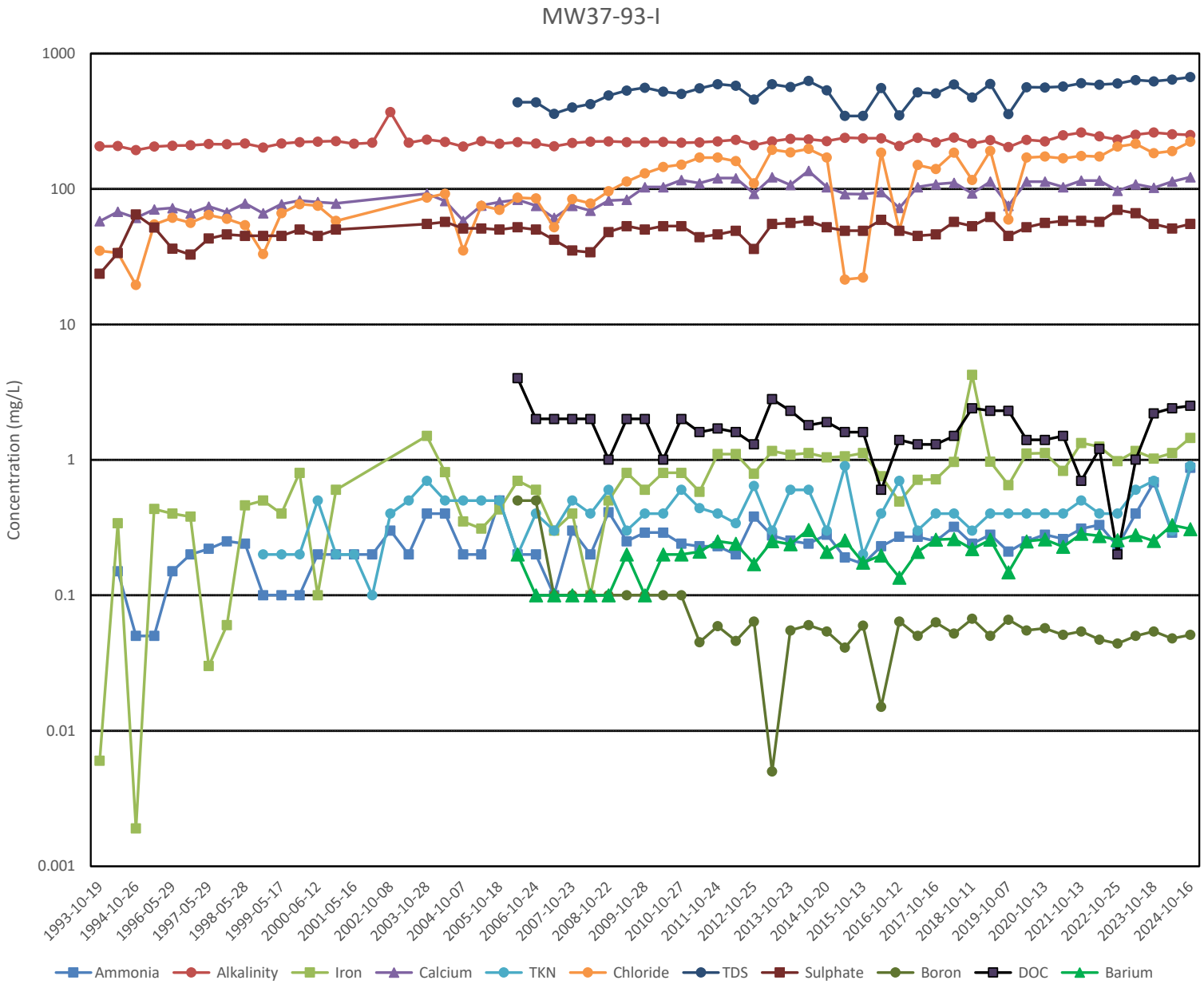
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW37-93-I
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100
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0.01
0.001
Concentration (mg/L)
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1994-10-26
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1997-05-29
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1999-05-17
2000-06-12
2001-05-16
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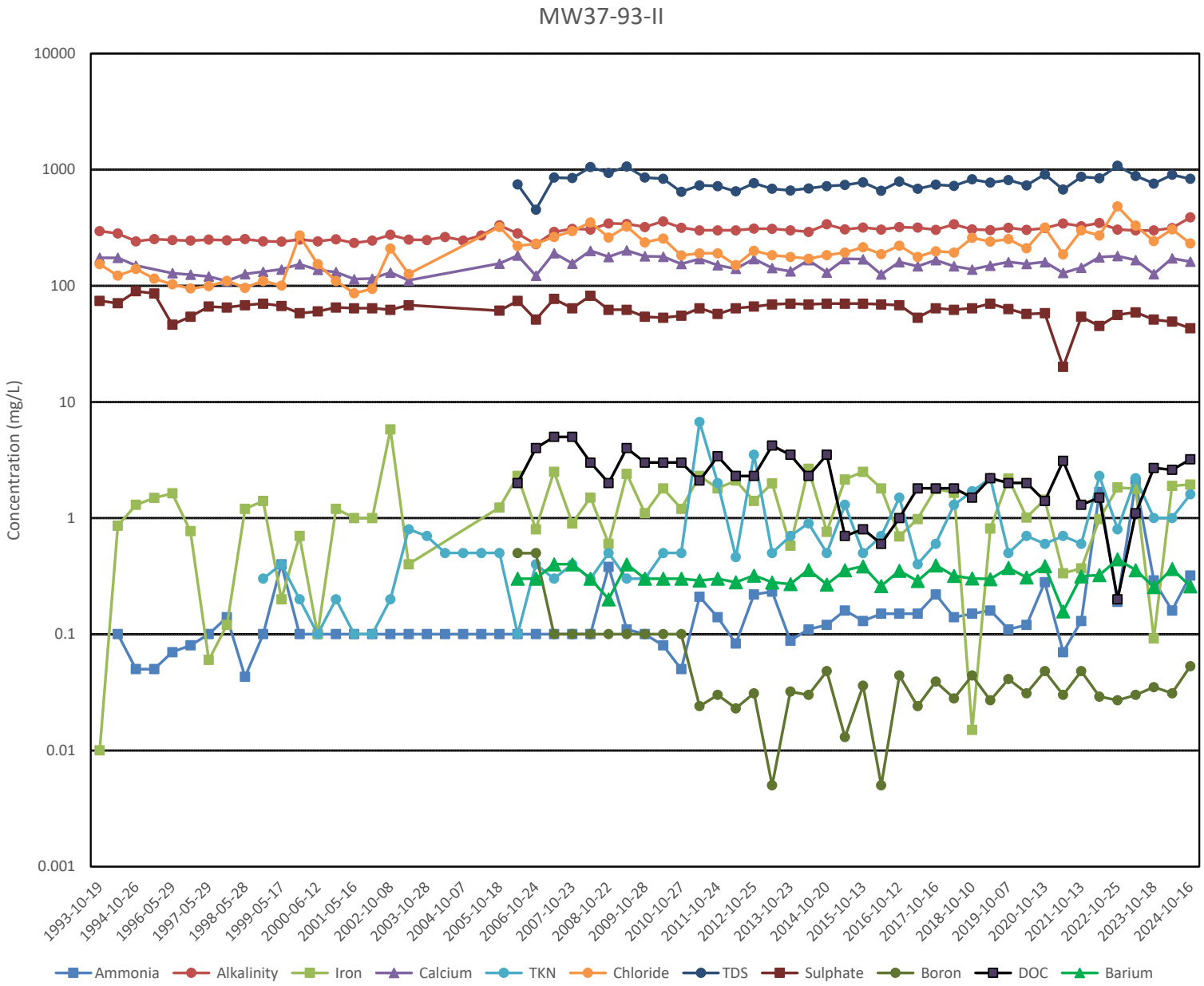
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW37-93-II
Concentration (mg/L)
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0.01
0.001
1993-10-19
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1999-05-17
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Iron
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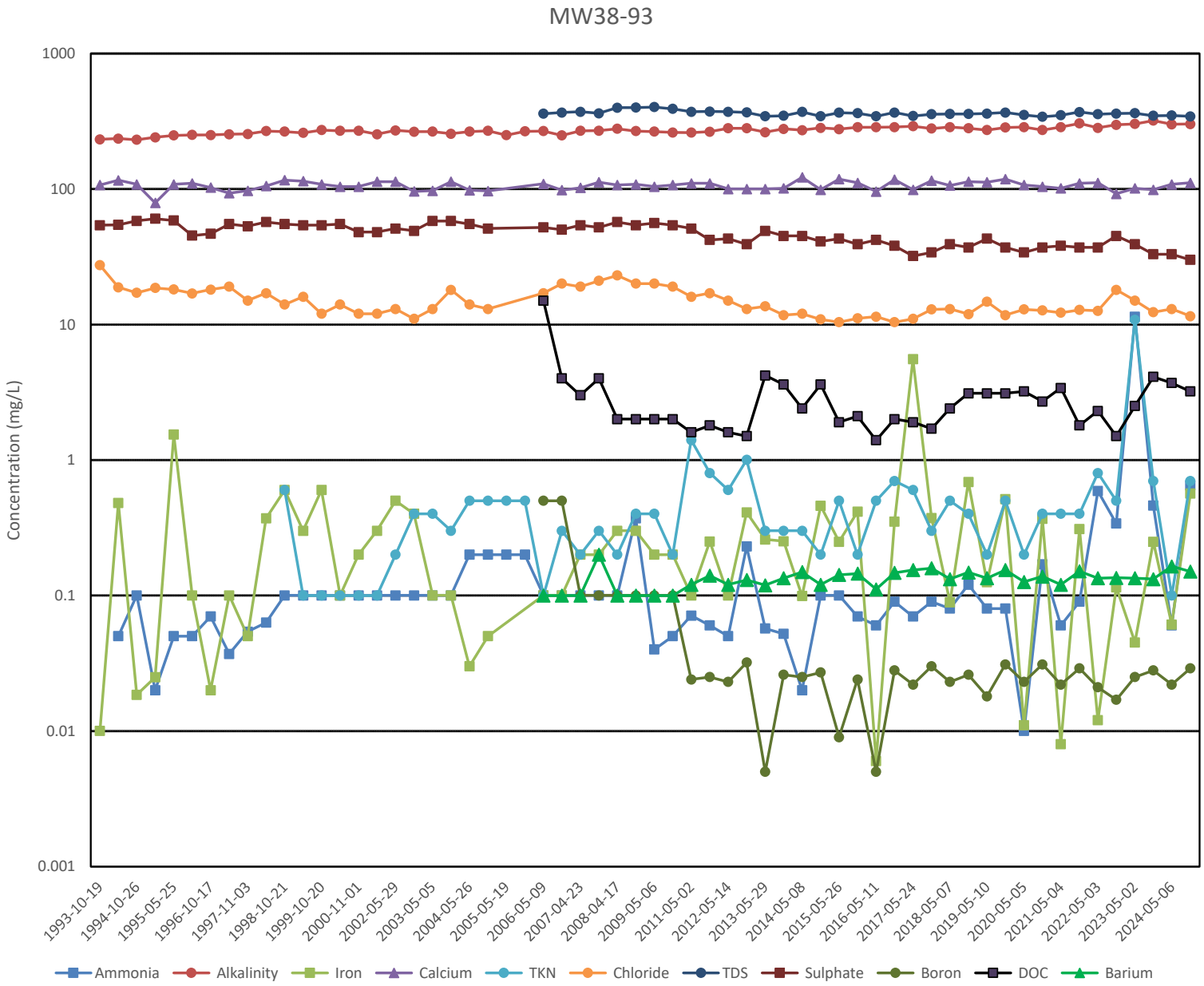
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW38-93
Concentration (mg/L)
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100
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0.01
0.001
1993-10-19
1994-10-26
1995-05-25
1996-10-17
1997-11-03
1998-10-21
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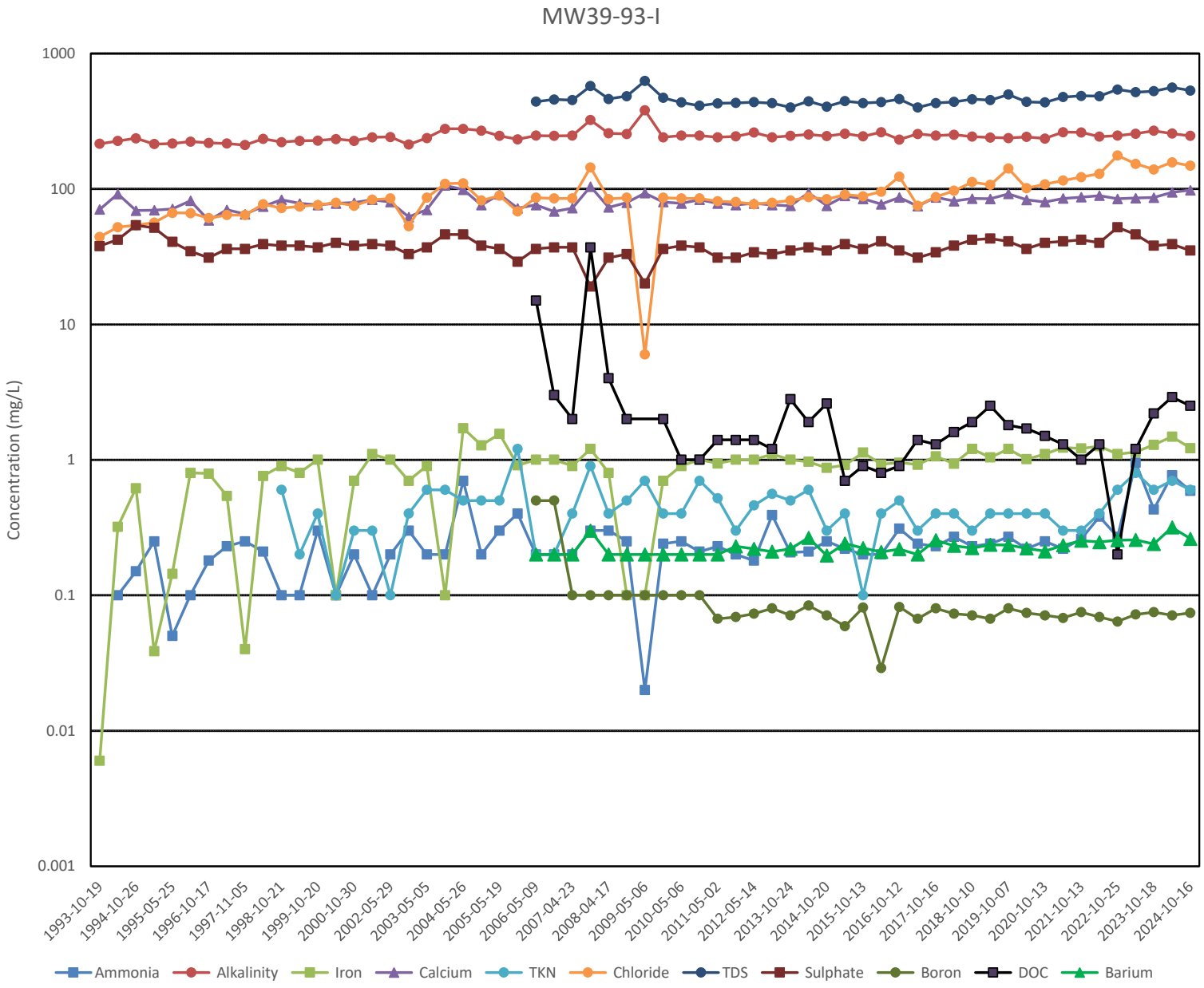
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW39-93-I
Concentration (mg/L)
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0.01
0.001
1993-10-19
1994-10-26
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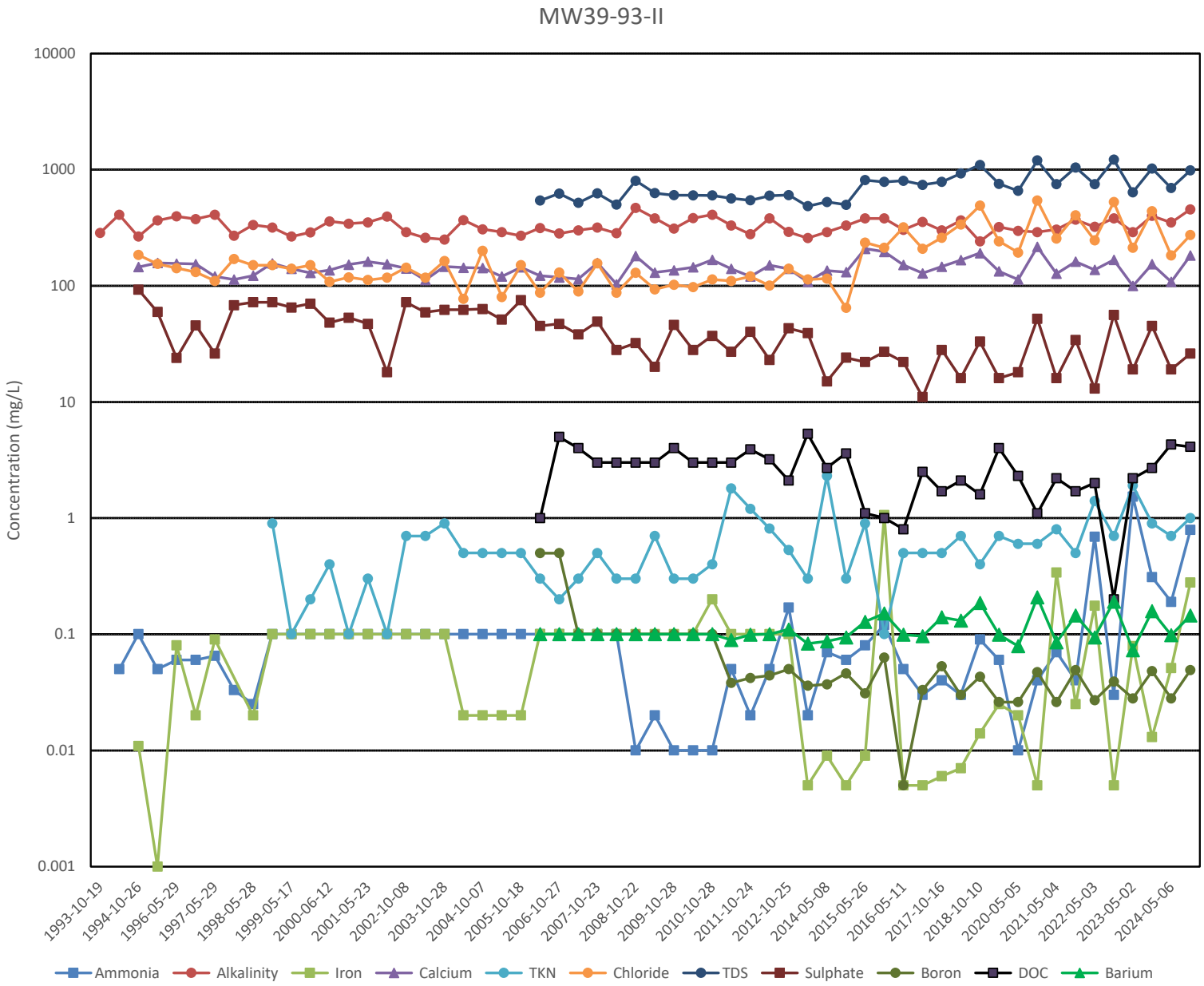
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW39-93-II
Concentration (mg/L)
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2023-05-02
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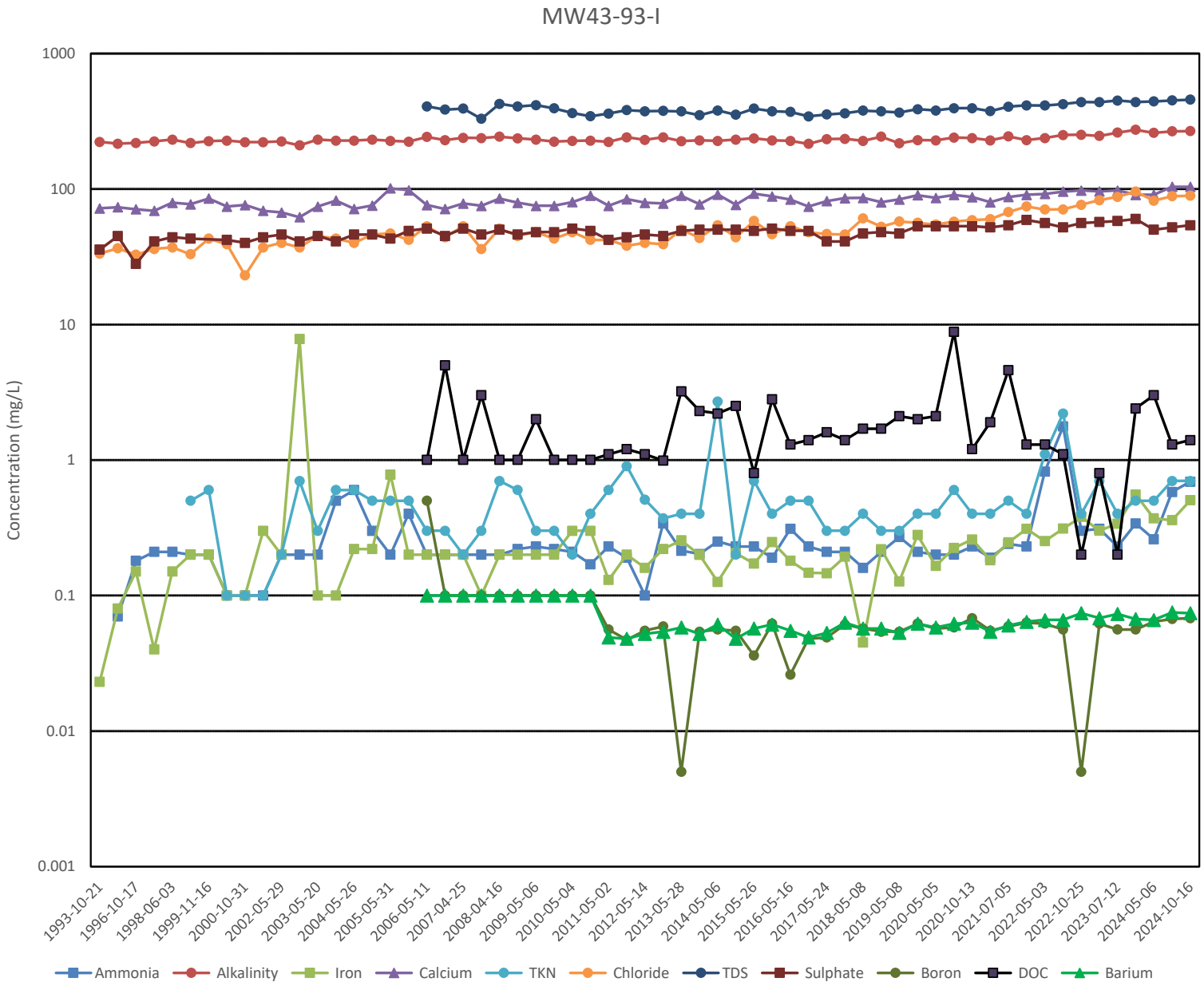
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW43-93-I
Concentration (mg/L)
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0.001
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2002-05-29
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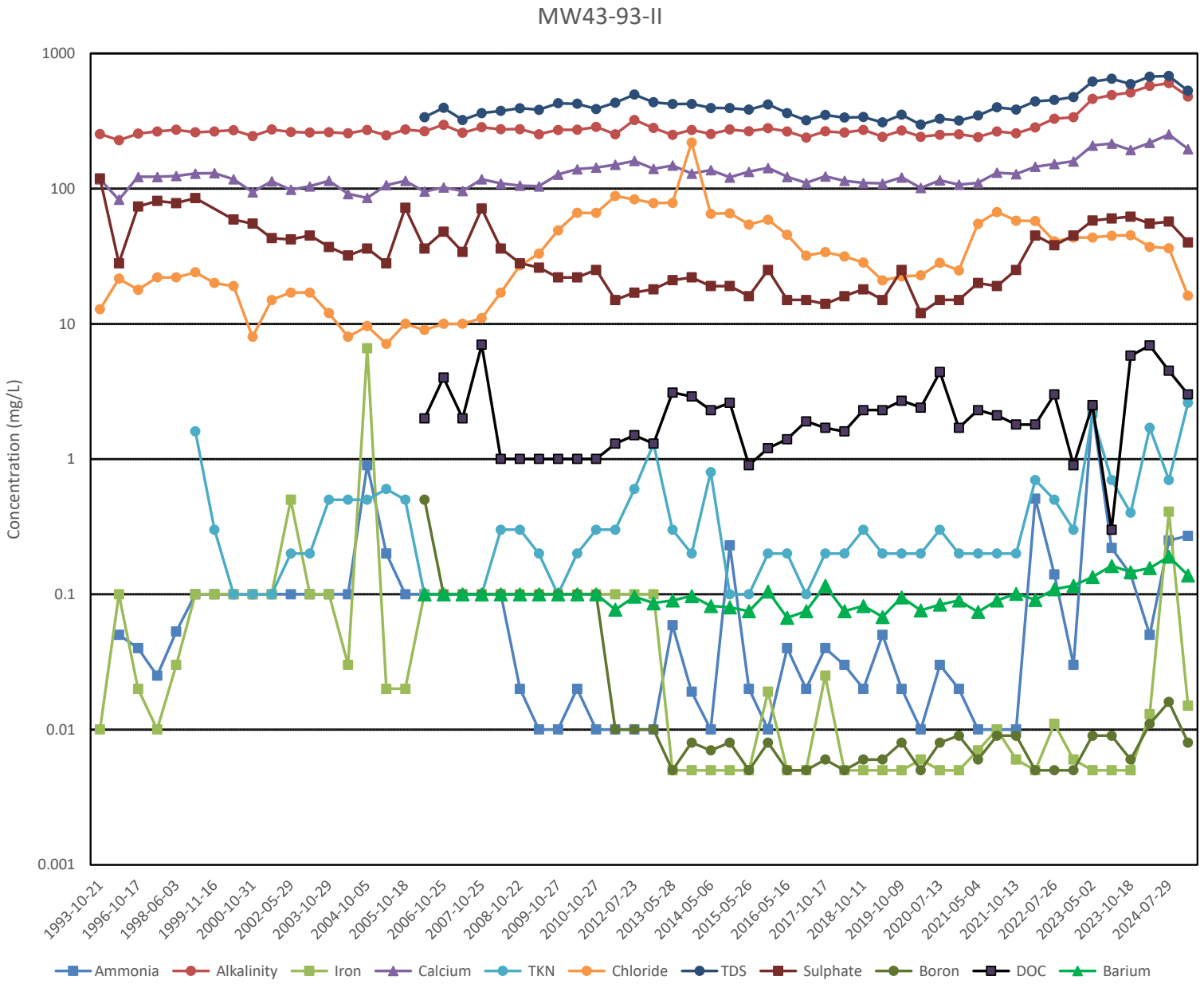
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW43-93-II
Concentration (mg/L)
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0.01
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Iron
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TKN
Chloride
TDS
Sulphate
Boron
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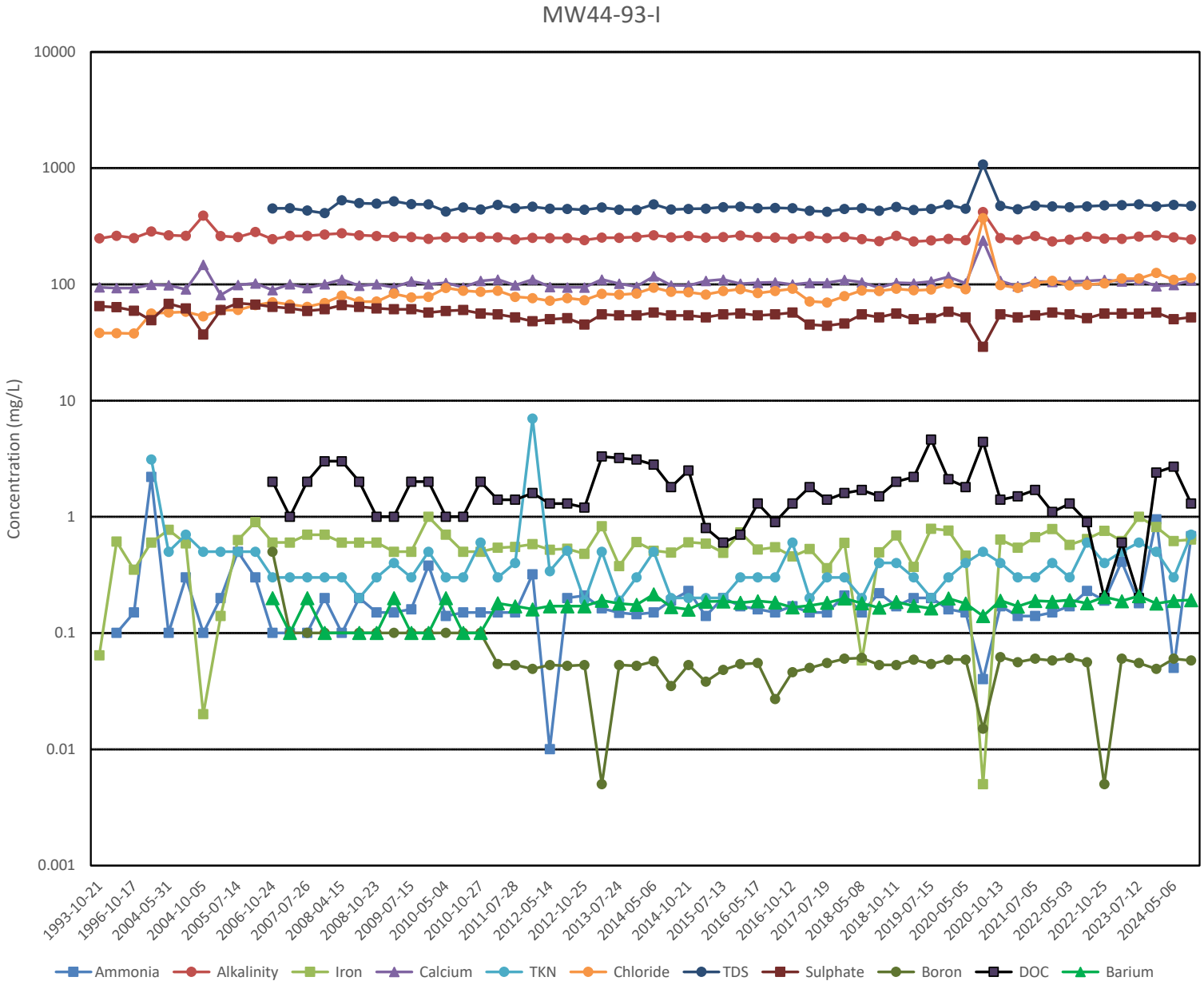
Barium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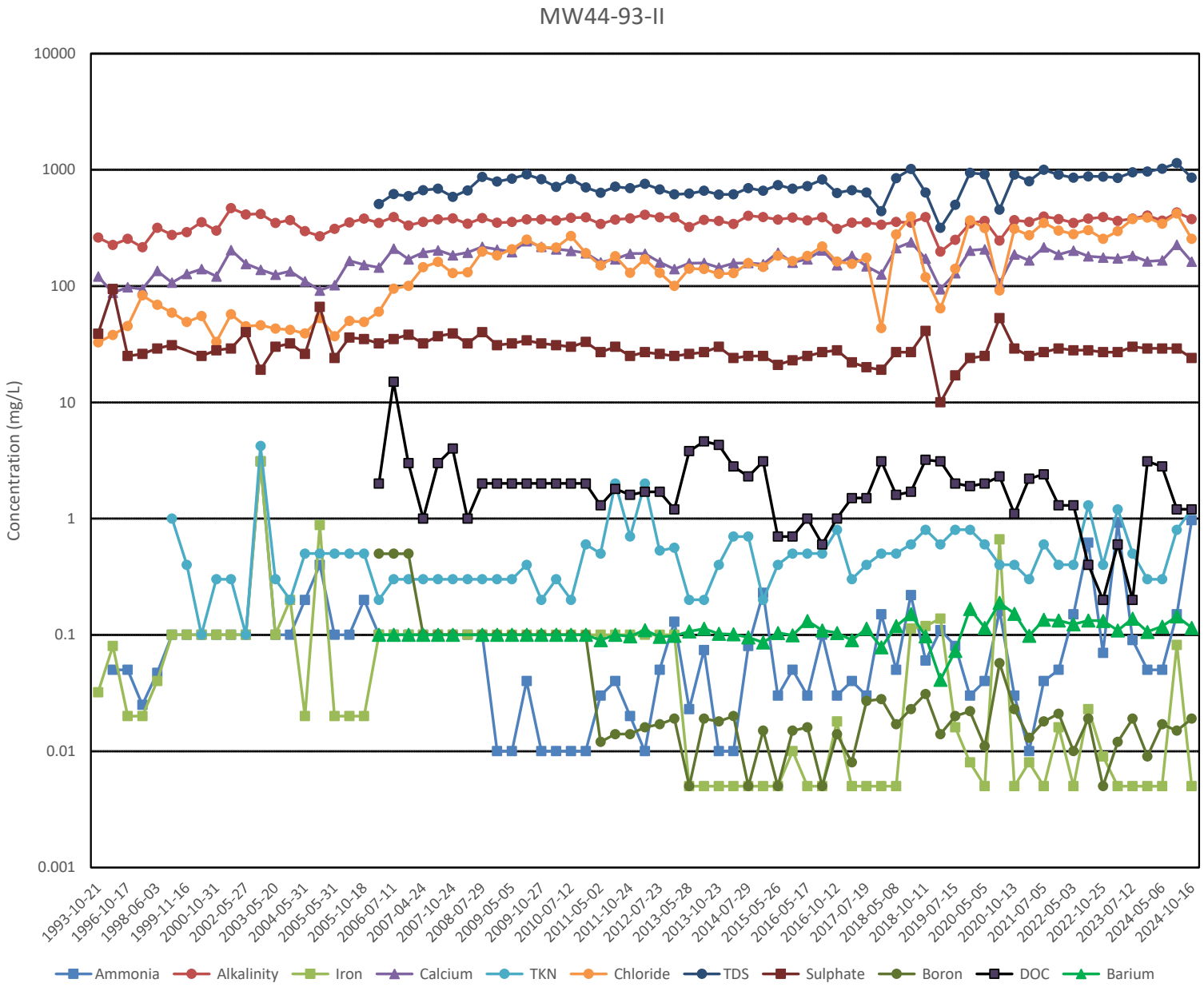
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Concentration (mg/L)
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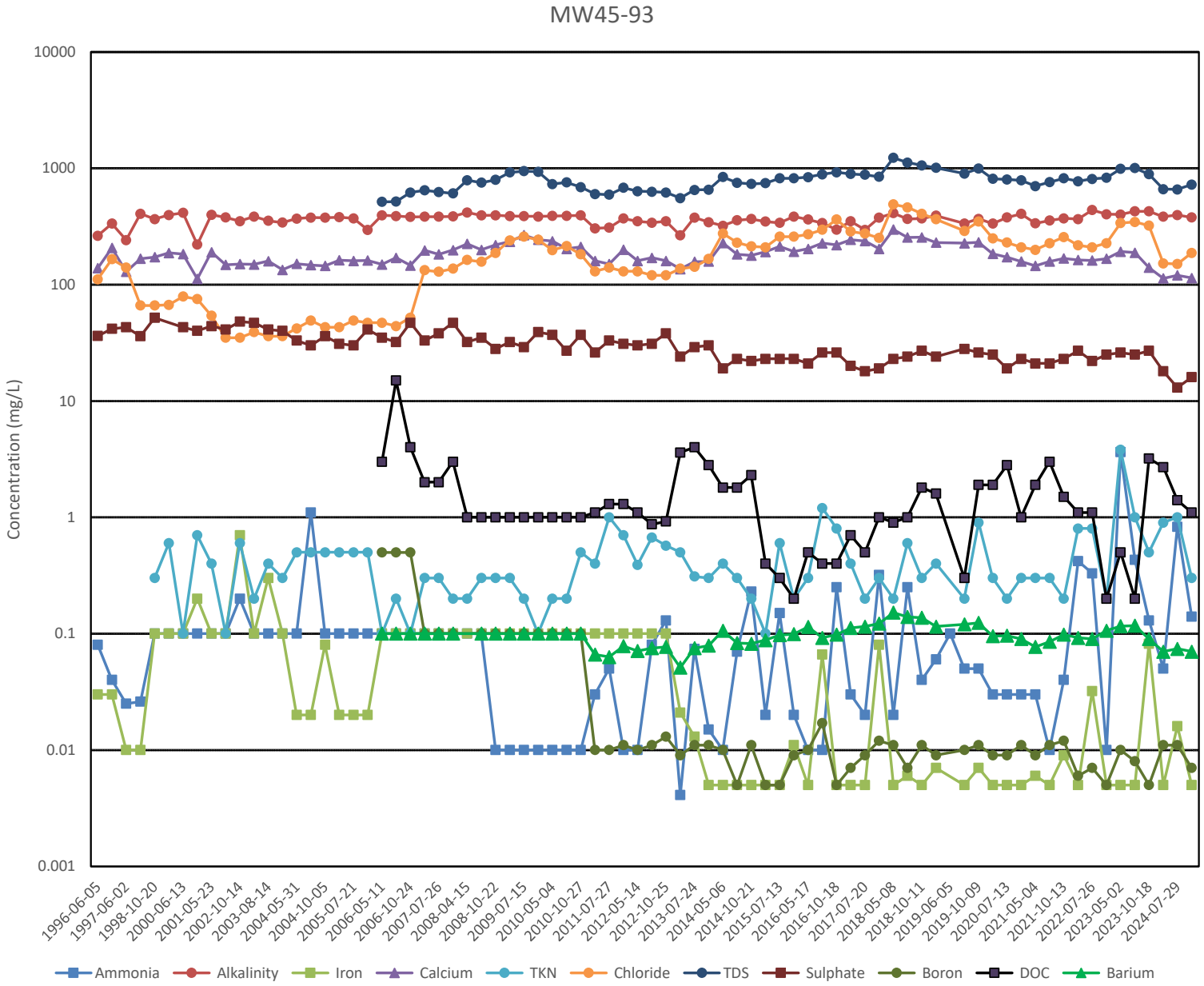
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW45-93
Concentration (mg/L)
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2002-10-14
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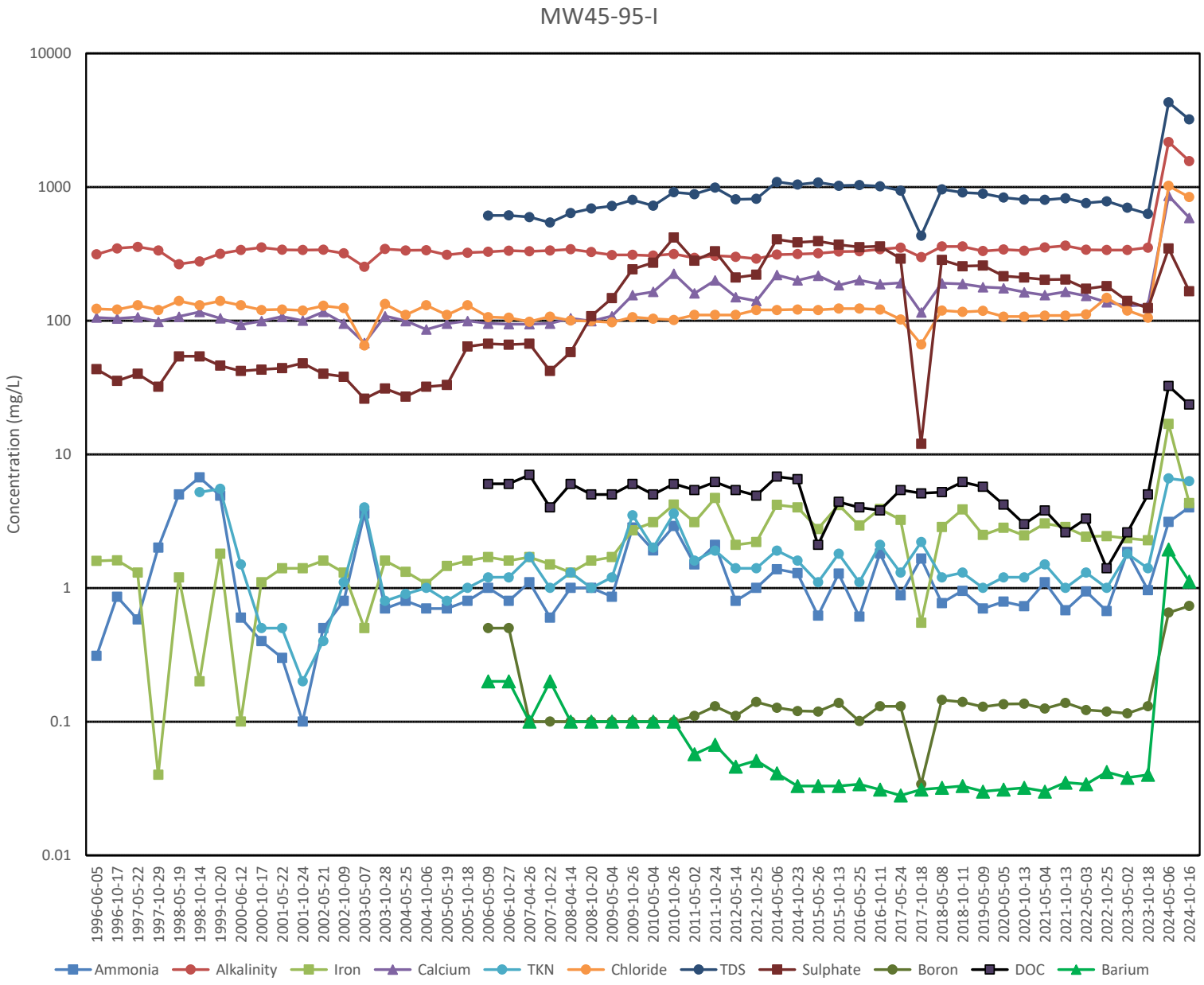
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium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Concentration (mg/L)
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Alkalinity
Iron
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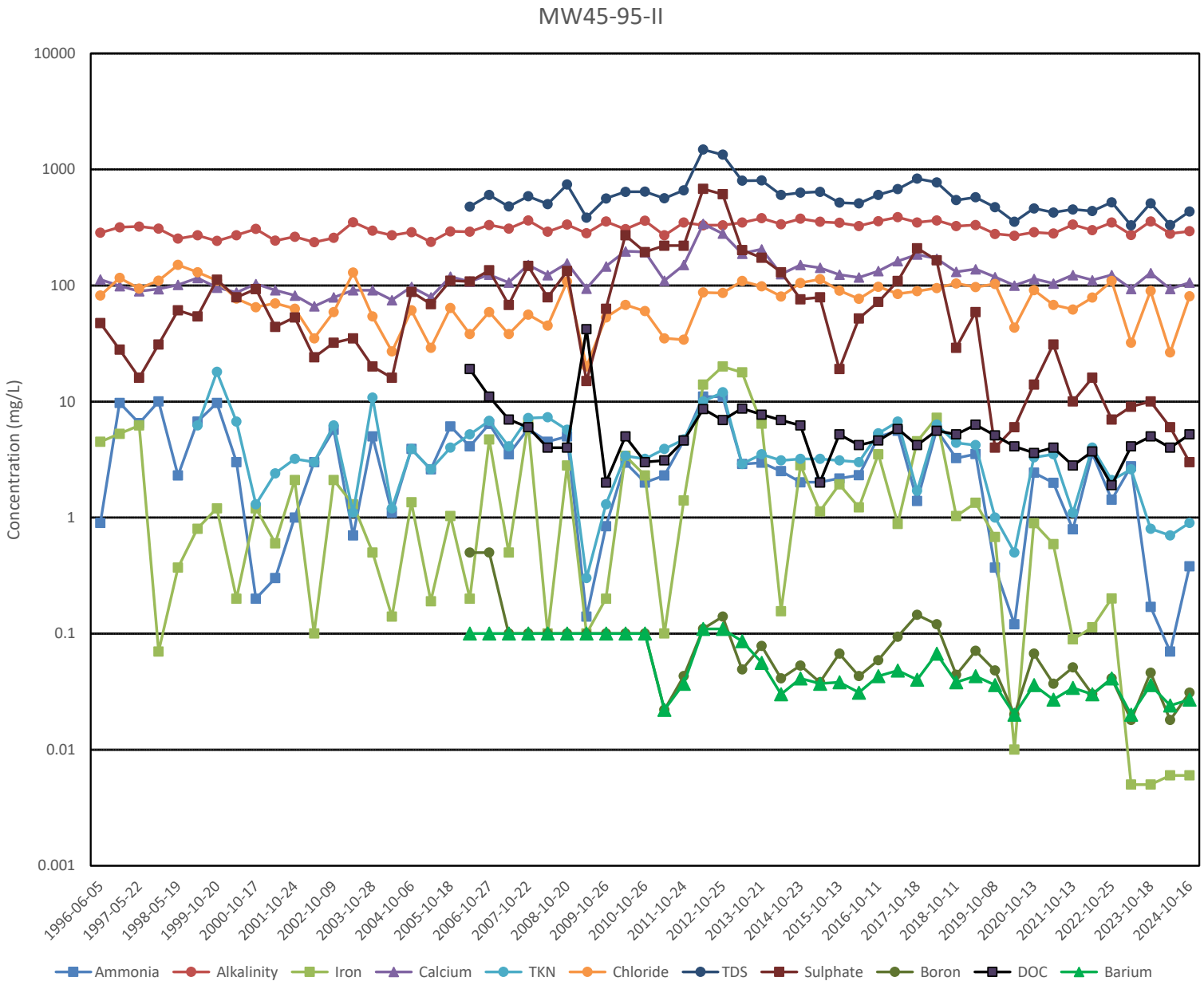
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium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Concentration (mg/L)
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Alkalinity
Iron
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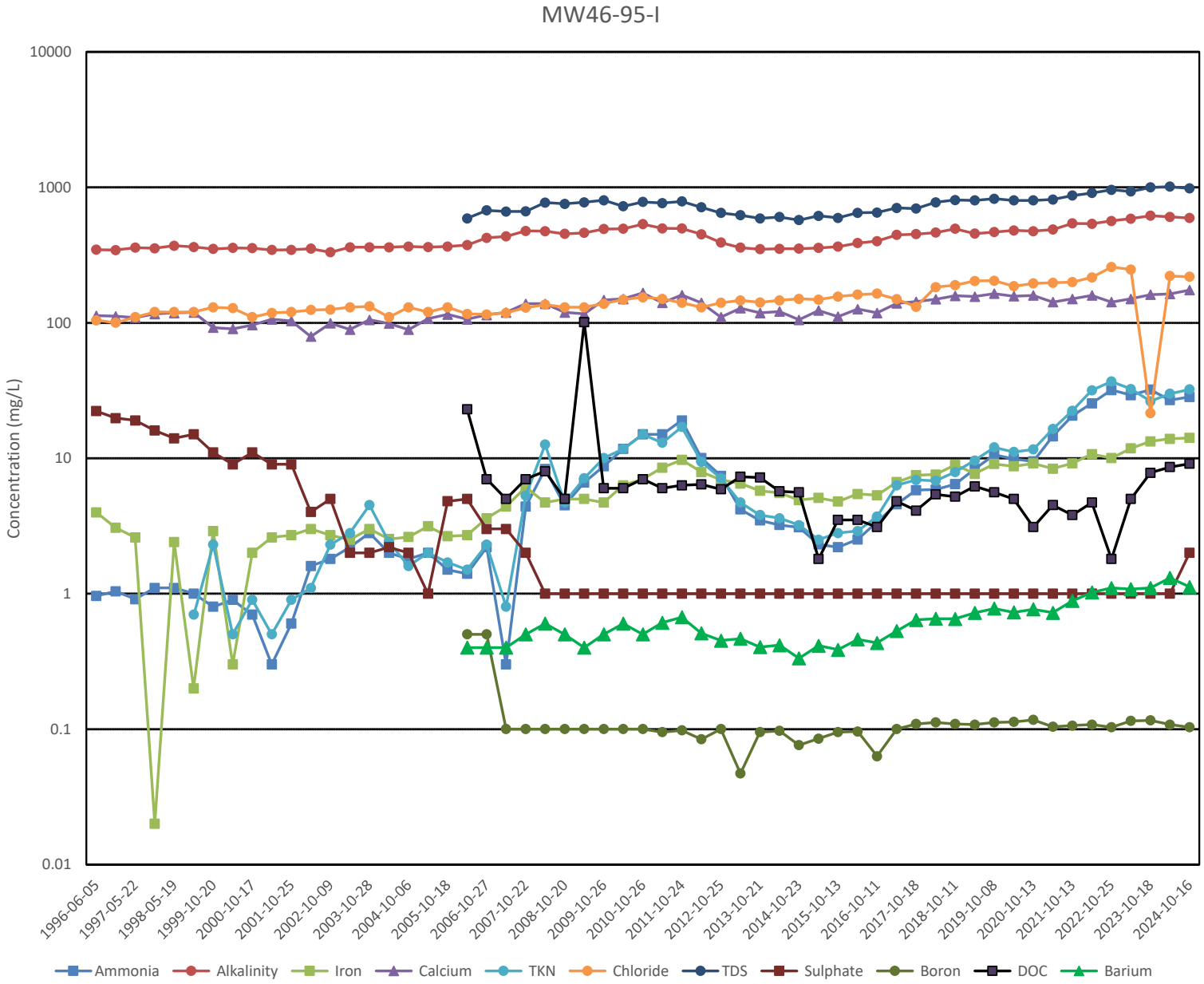
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW46-95-I
Concentration (mg/L)
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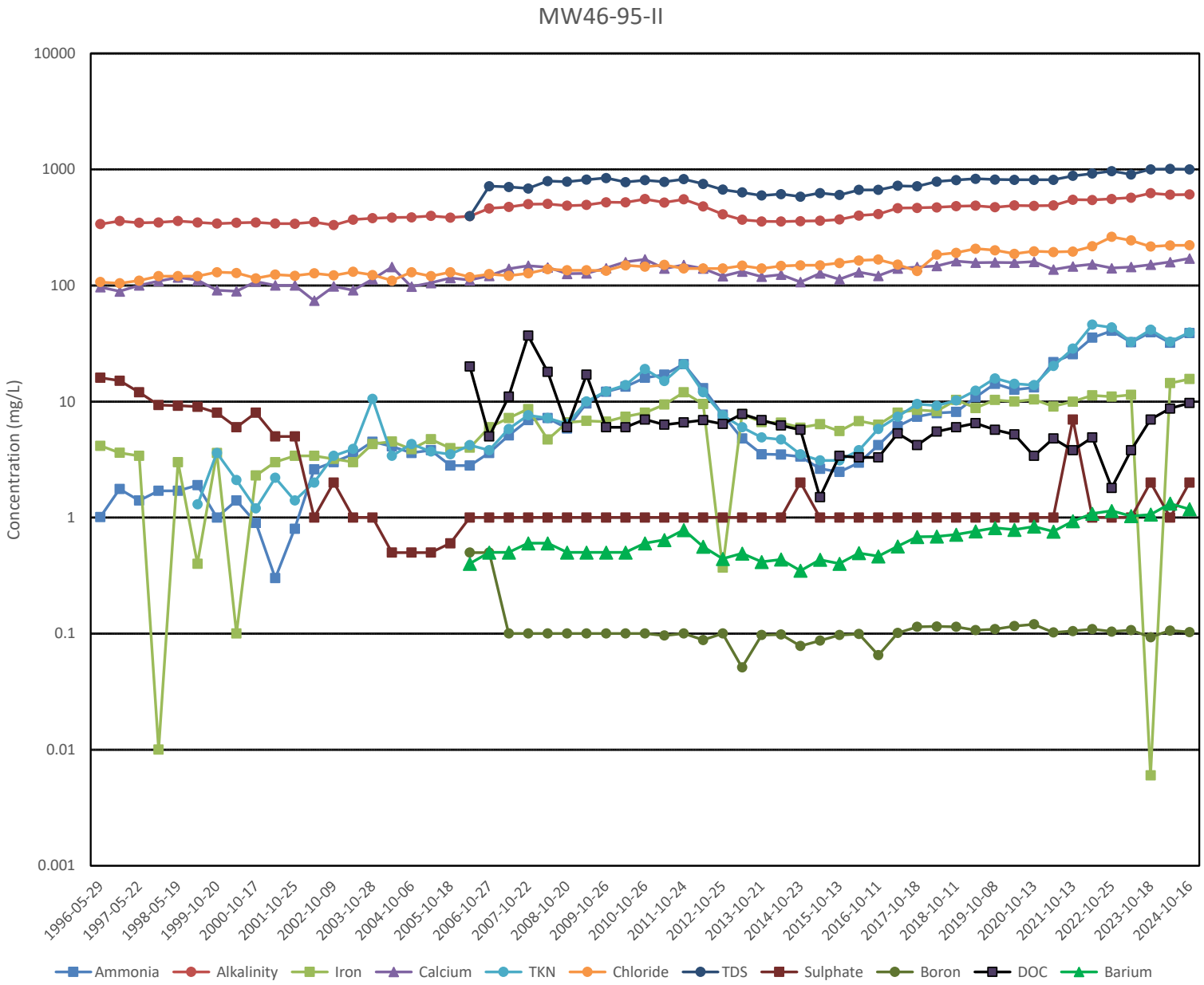
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW46-95-II
Concentration (mg/L)
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0.01
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Ammonia
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Iron
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Chloride
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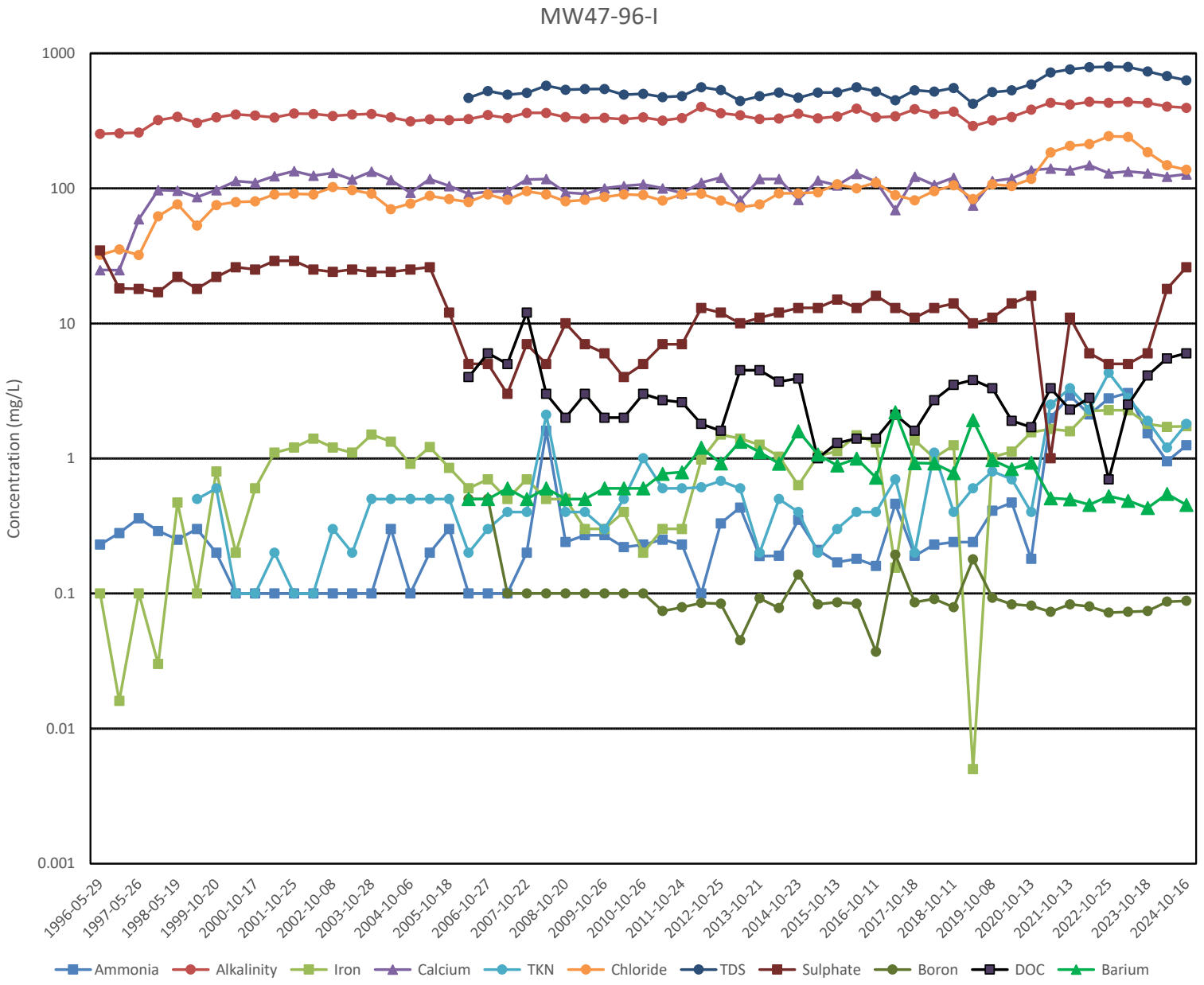
Barium


MW47-96-I
Concentration (mg/L)
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0.01
0.001
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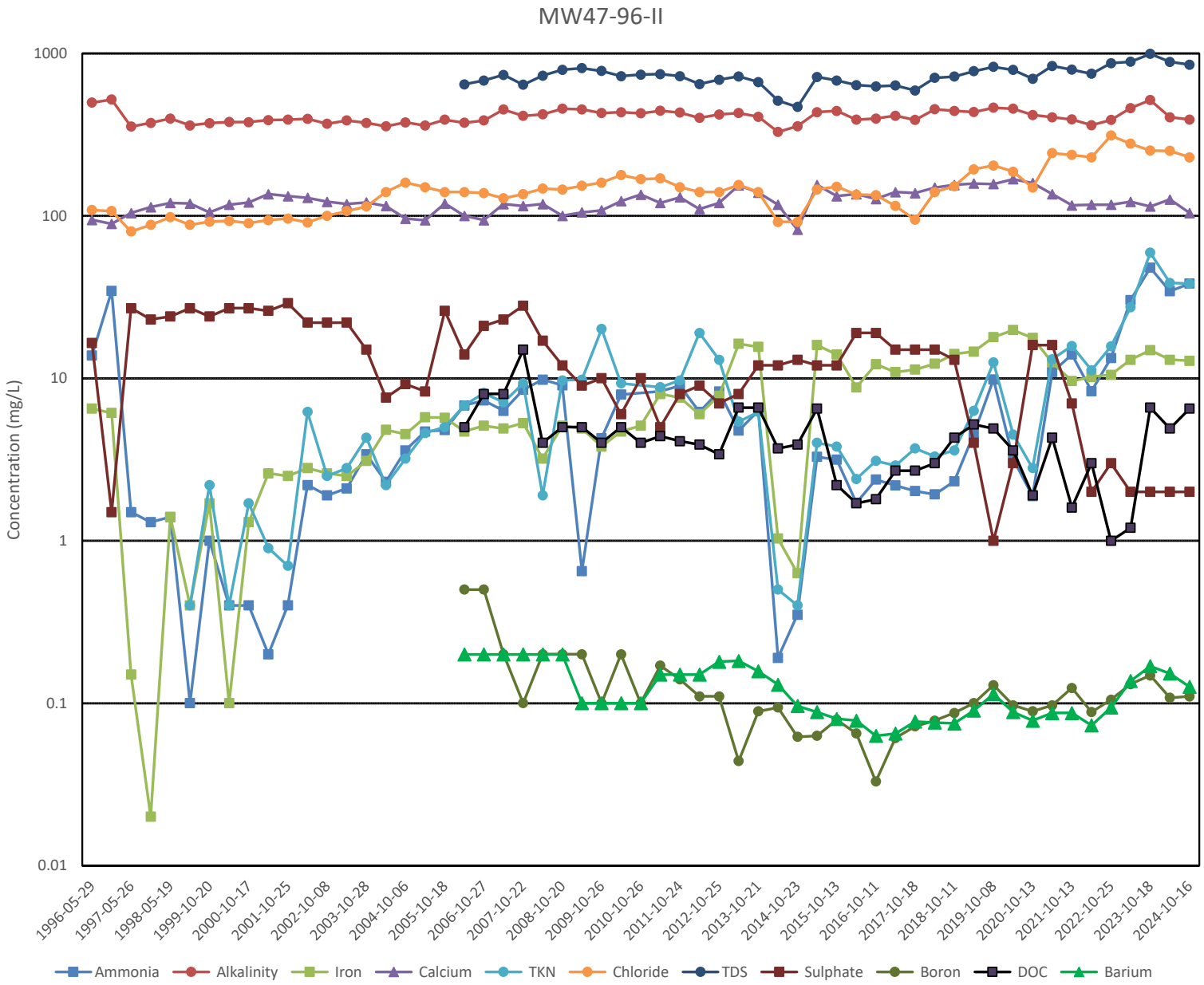
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW47-96-II
Concentration (mg/L)
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Ammonia
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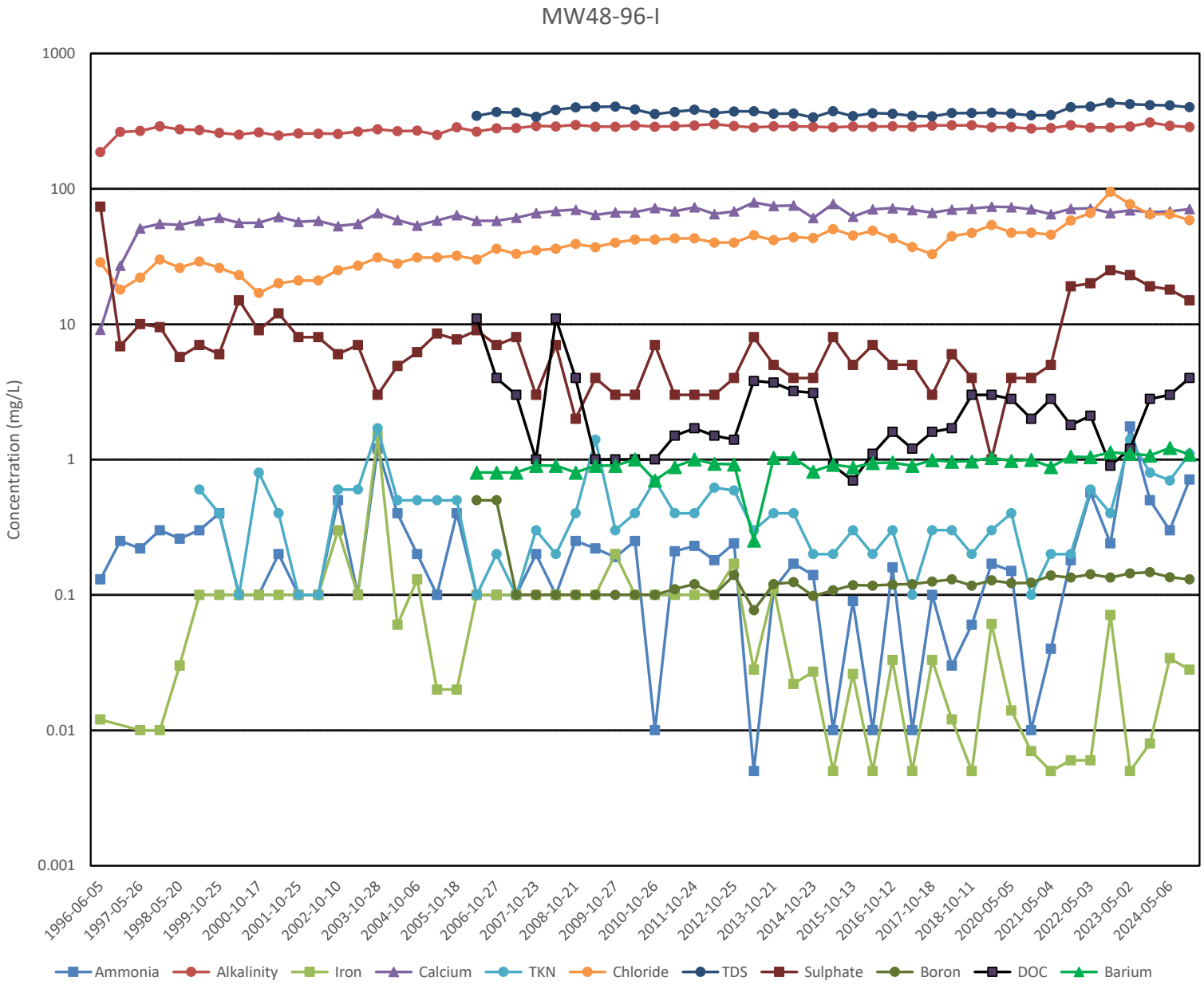
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW48-96-I
Concentration (mg/L)
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0.01
0.001
1996-06-05
1997-05-26
1998-05-20
1999-10-25
2000-10-17
2001-10-25
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2004-10-06
2005-10-18
2006-10-27
2007-10-23
2008-10-21
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2010-10-26
2011-10-24
2012-10-25
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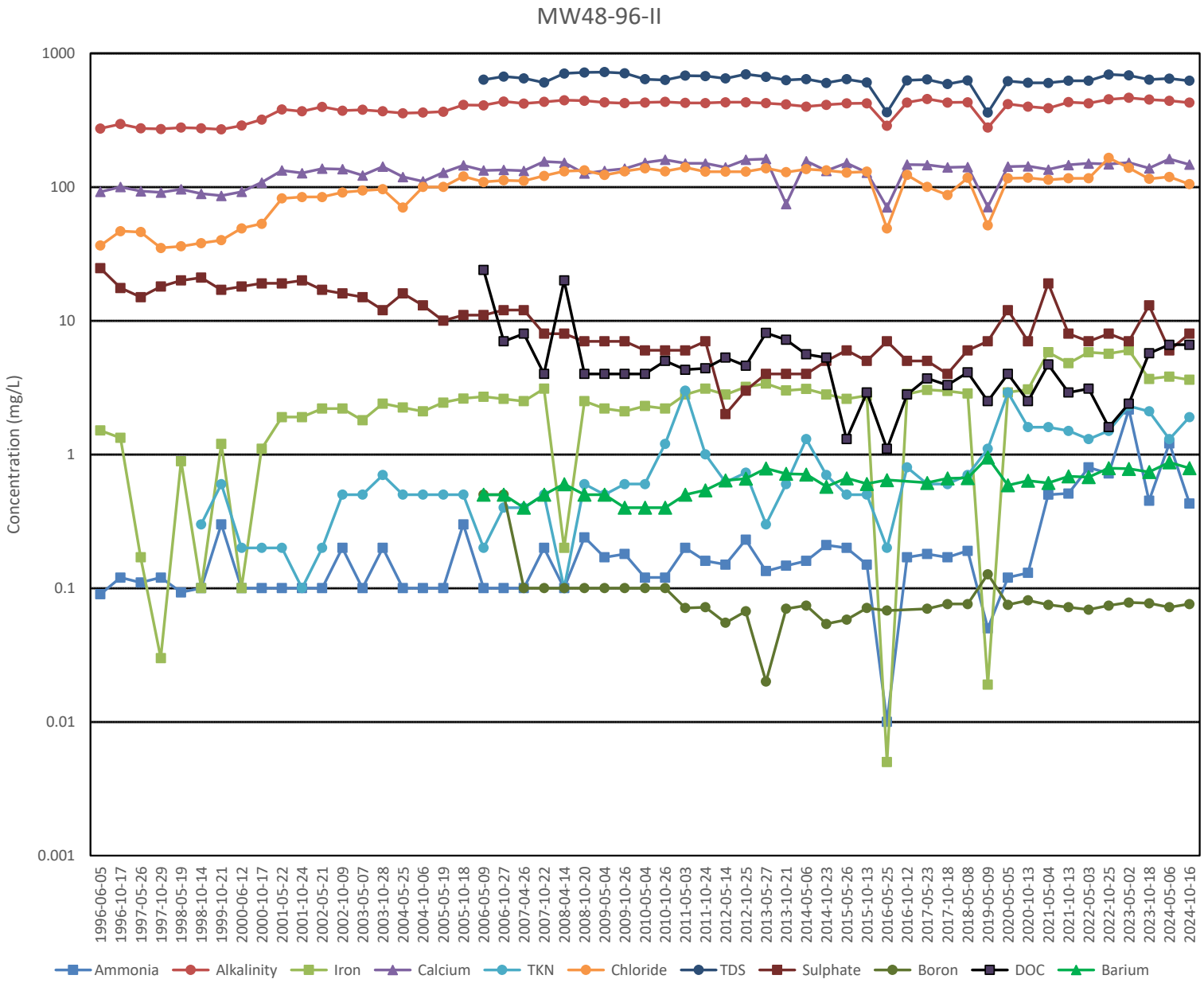
2016-10-12
2017-10-18
2018-10-11
2020-05-05
2021-05-04
2022-05-03
2023-05-02
2024-05-06
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW48-96-II
Concentration (mg/L)
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100
10
1
0.1
0.01
0.001
1996-06-05
1996-10-17
1997-05-26
1997-10-29
1998-05-19
1998-10-14
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2000-06-12
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2003-10-28
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2016-10-12
2017-05-23
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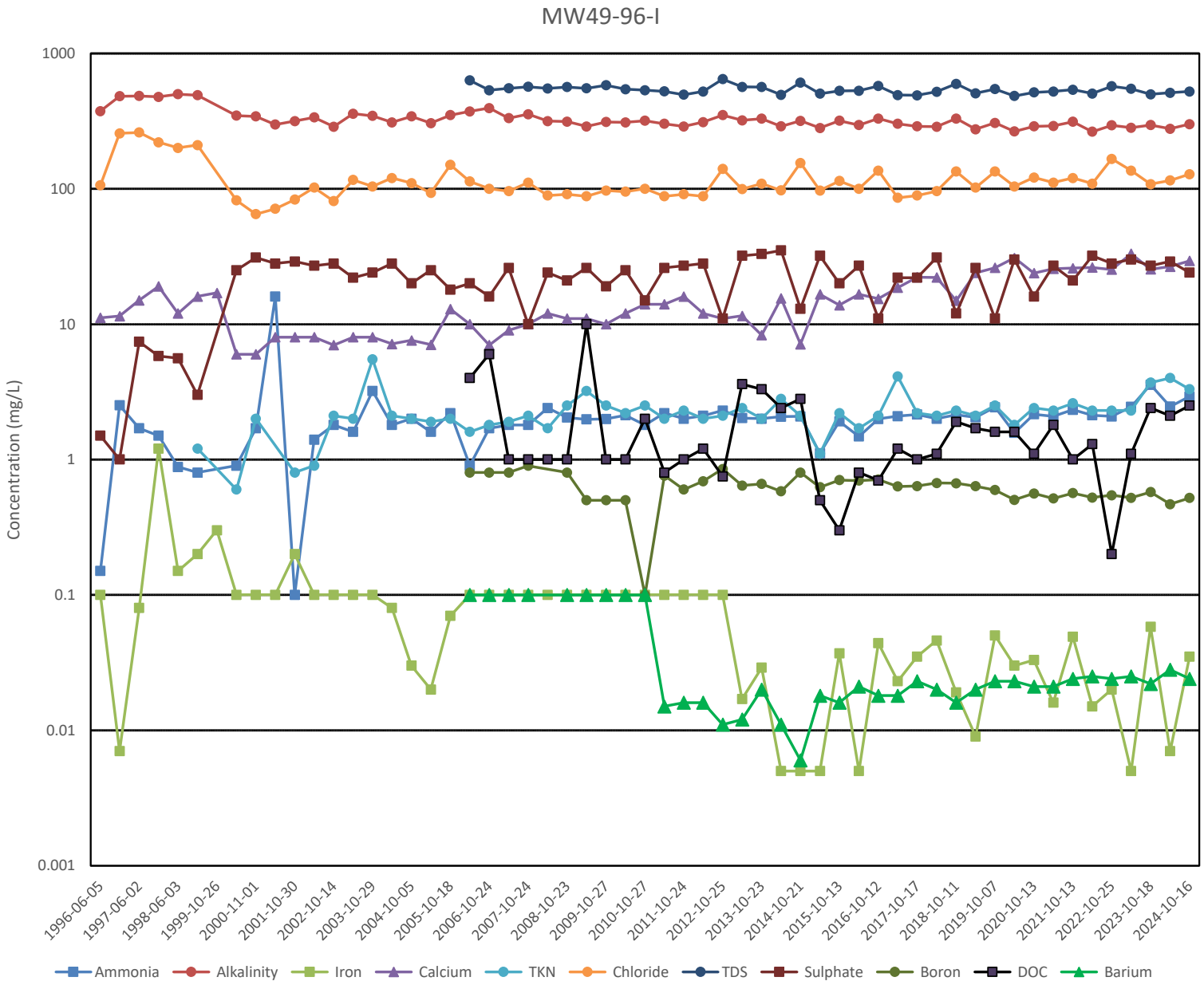
2019-05-09
2020-05-05
2020-10-13
2021-05-04
2021-10-13
2022-05-03
2022-10-25
2023-05-02
2023-10-18
2024-05-06
2024-10-16
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW49-96-I
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
1996-06-05
1997-06-02
1998-06-03
1999-10-26
2000-11-01
2001-10-30
2002-10-14
2003-10-29
2004-10-05
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2011-10-24
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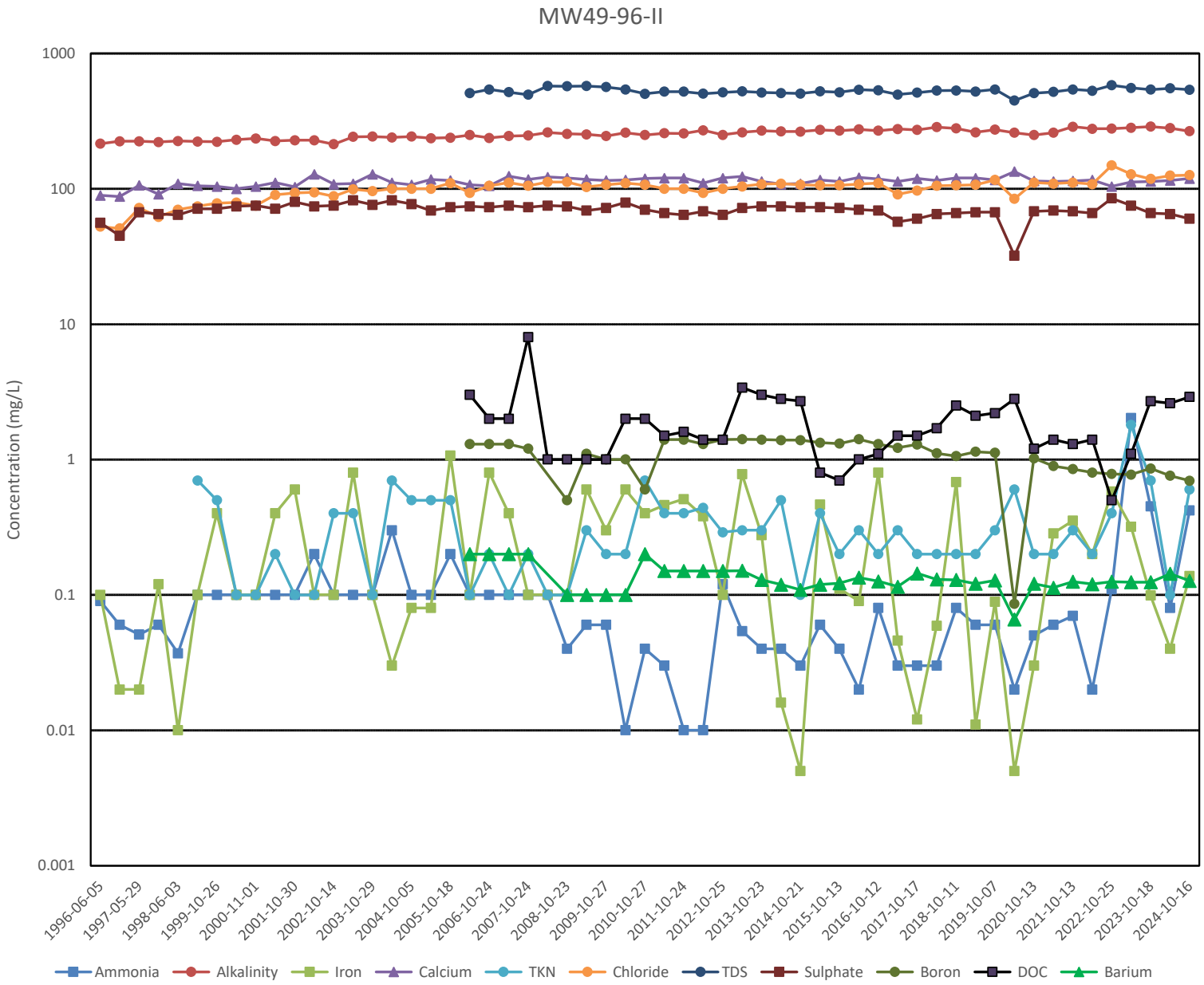
2017-10-17
2018-10-11
2019-10-07
2020-10-13
2021-10-13
2022-10-25
2023-10-18
2024-10-16
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW49-96-II
Concentration (mg/L)
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100
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0.01
0.001
1996-06-05
1997-05-29
1998-06-03
1999-10-26
2000-11-01
2001-10-30
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2003-10-29
2004-10-05
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2021-10-13
2022-10-25
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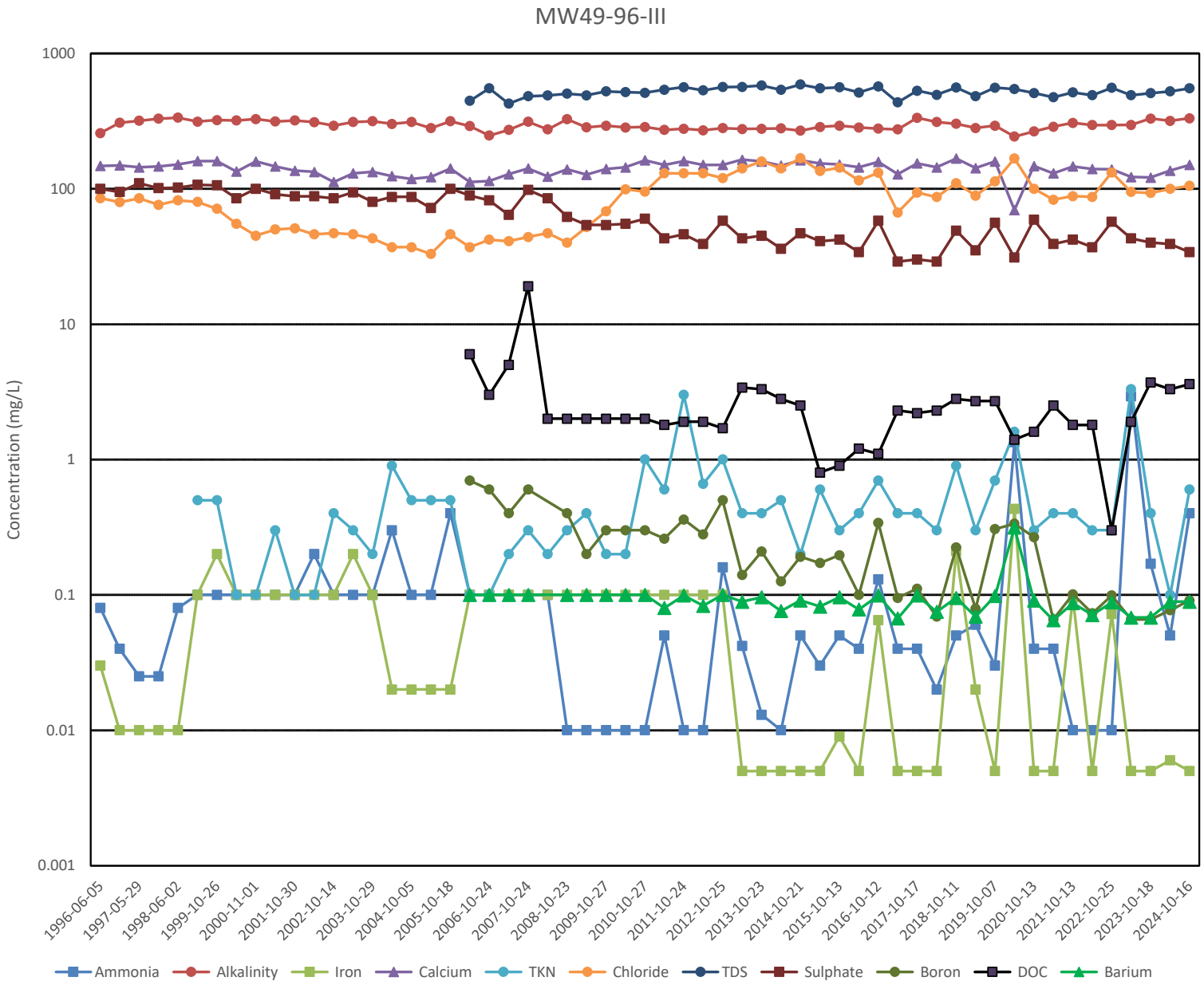
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW49-96-III
Concentration (mg/L)
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0.1
0.01
0.001
1996-06-05
1997-05-29
1998-06-02
1999-10-26
2000-11-01
2001-10-30
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2004-10-05
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2022-10-25
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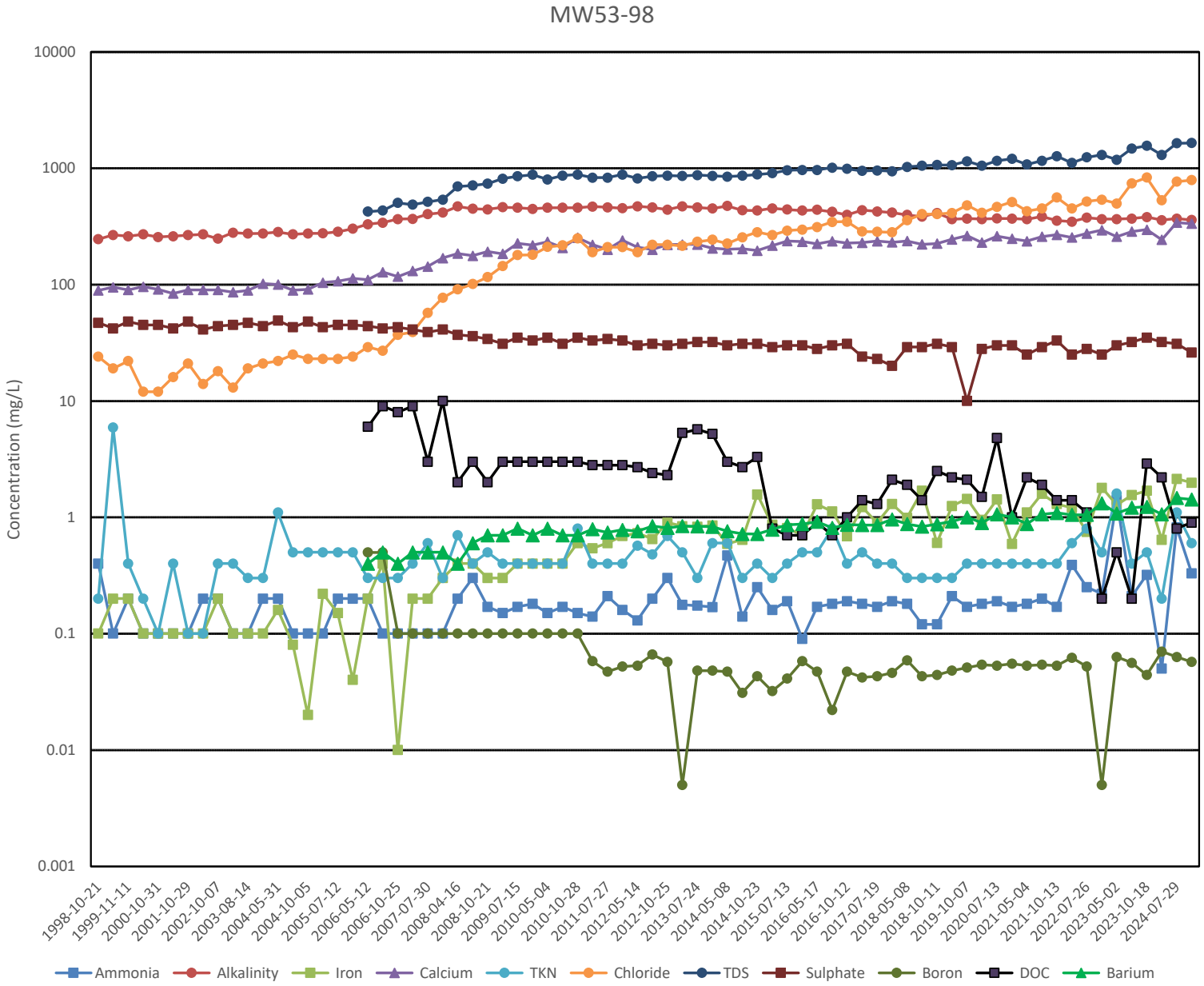
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW53-98
Concentration (mg/L)
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1000
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1
0.1
0.01
0.001
1998-10-21
1999-11-11
2000-10-31
2001-10-29
2002-10-07
2003-08-14
2004-05-31
2004-10-05
2005-07-12
2006-05-12
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2007-07-30
2008-04-16
2008-10-21
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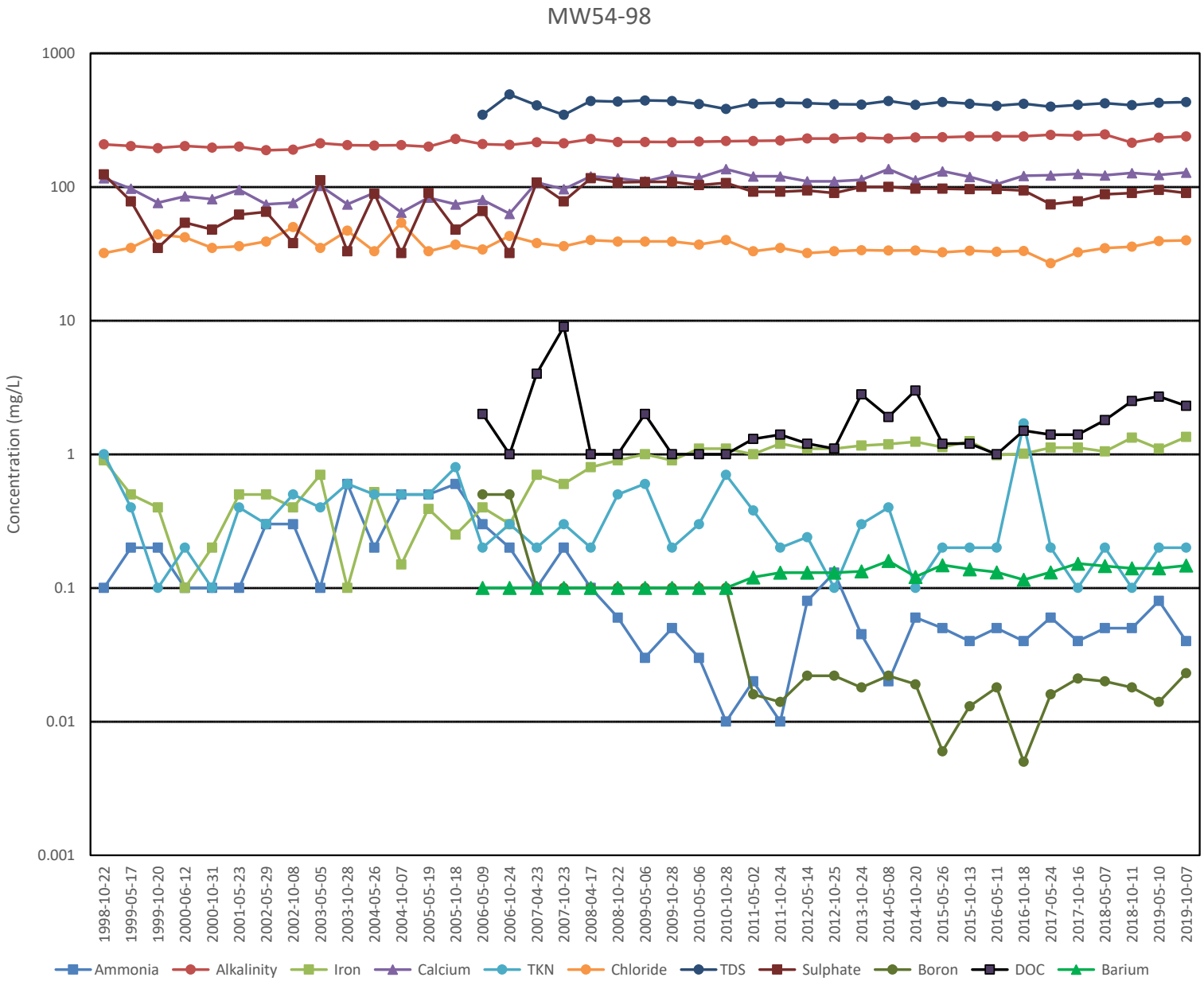
2018-05-08
2018-10-11
2019-10-07
2020-07-13
2021-05-04
2021-10-13
2022-07-26
2023-05-02
2023-10-18
2024-07-29
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW54-98
Concentration (mg/L)
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100
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0.1
0.01
0.001
1998-10-22
1999-05-17
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2000-06-12
2000-10-31
2001-05-23
2002-05-29
2002-10-08
2003-05-05
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2018-10-11
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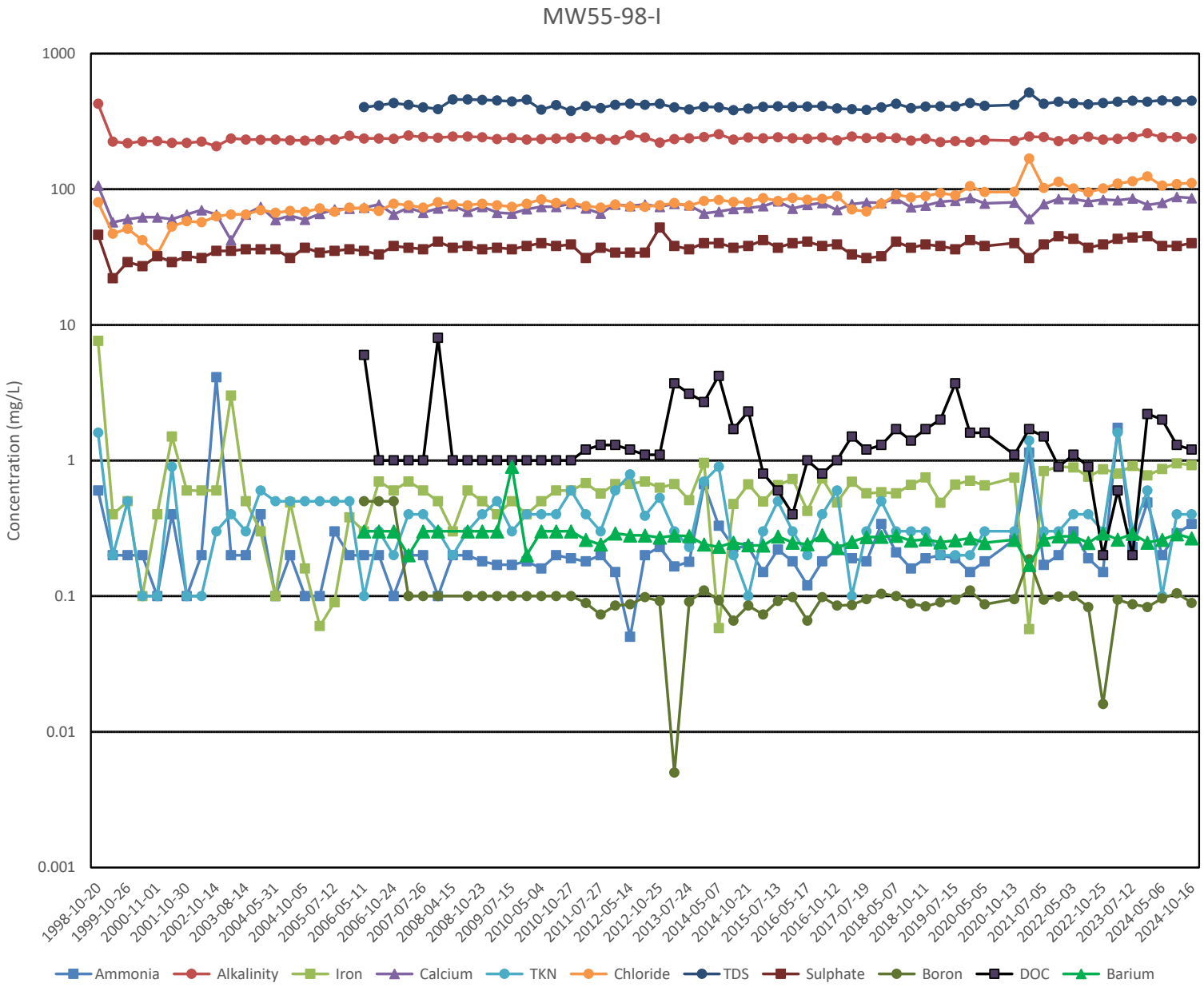
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW55-98-I
Concentration (mg/L)
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0.01
0.001
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2000-11-01
2001-10-30
2002-10-14
2003-08-14
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2004-10-05
2005-07-12
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2010-05-04
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2023-07-12
2024-05-06
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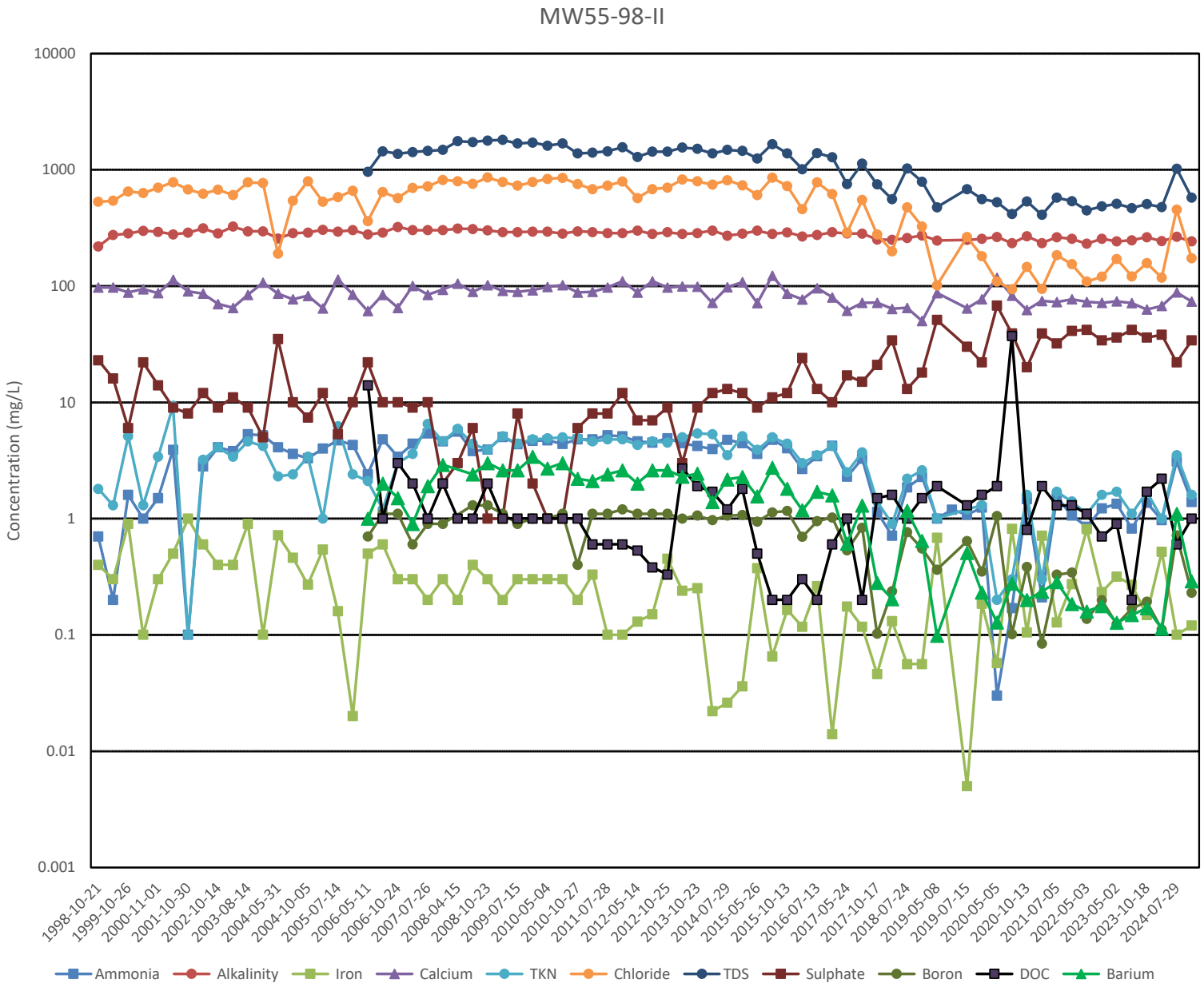
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW55-98-II
Concentration (mg/L)
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0.01
0.001
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1999-10-26
2000-11-01
2001-10-30
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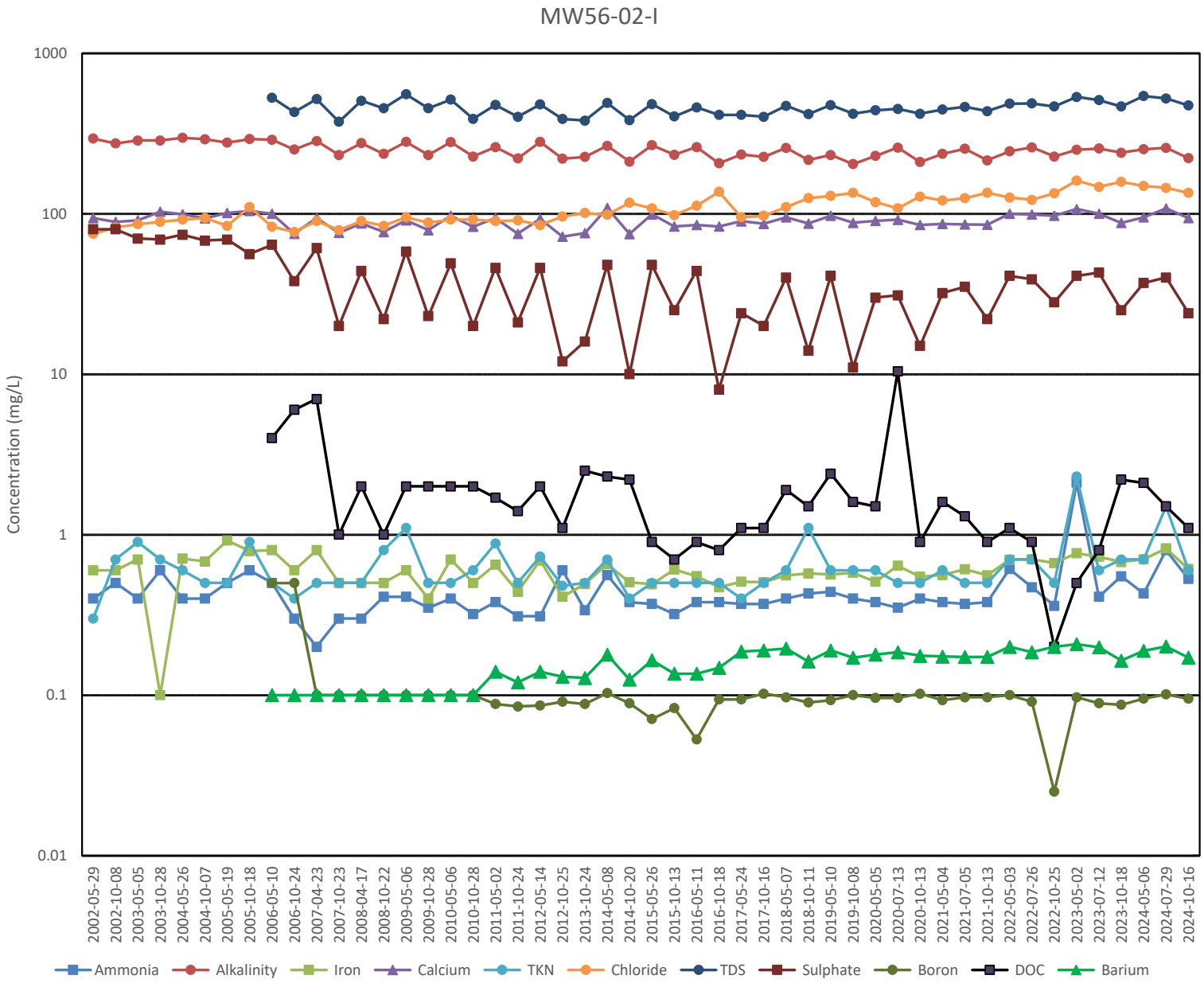
2022-05-03
2023-05-02
2023-10-18
2024-07-29
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW56-02-I
Concentration (mg/L)
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0.01
2002-05-29
2002-10-08
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2024-05-06
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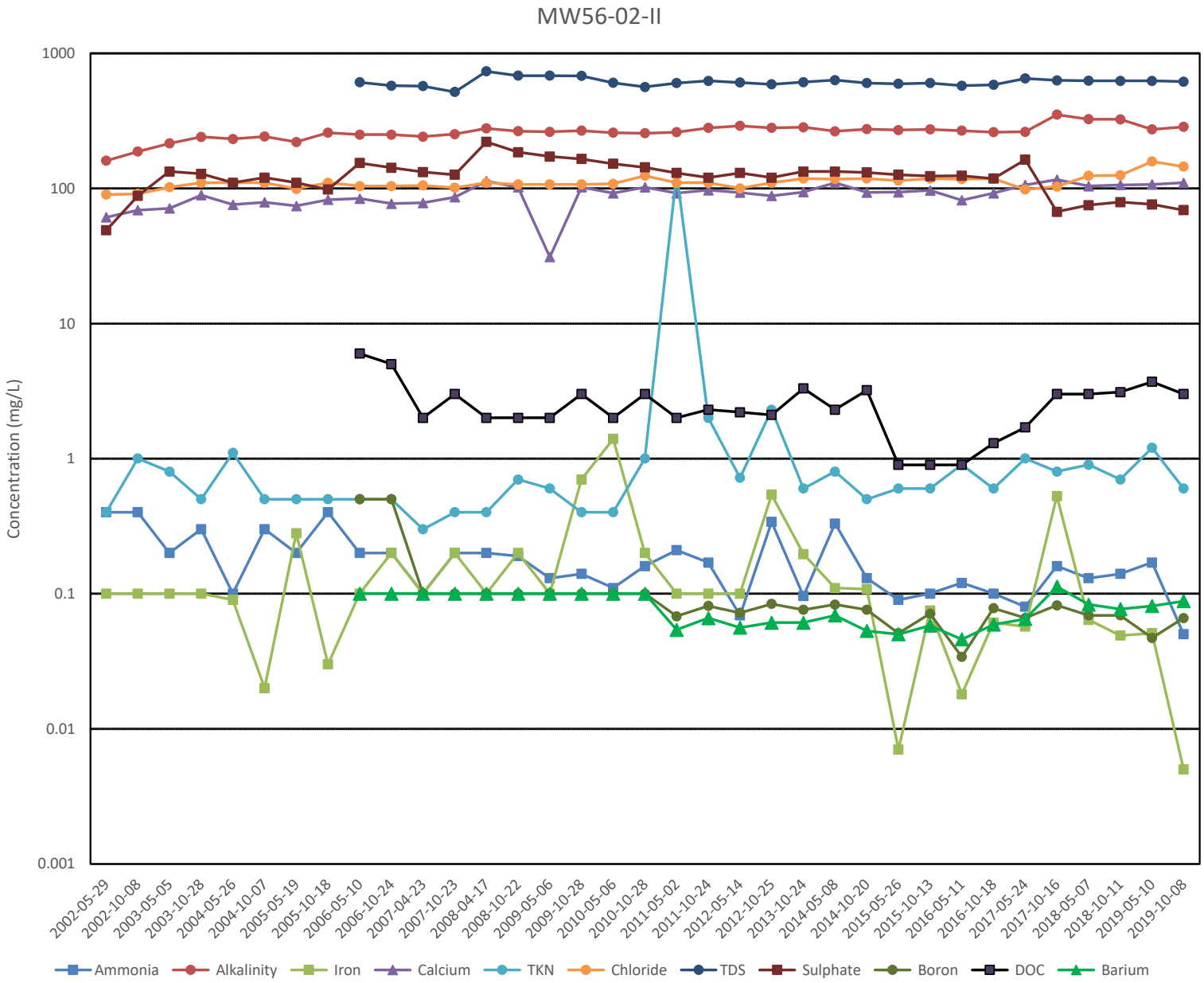
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW56-02-II
Concentration (mg/L)
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2018-10-11
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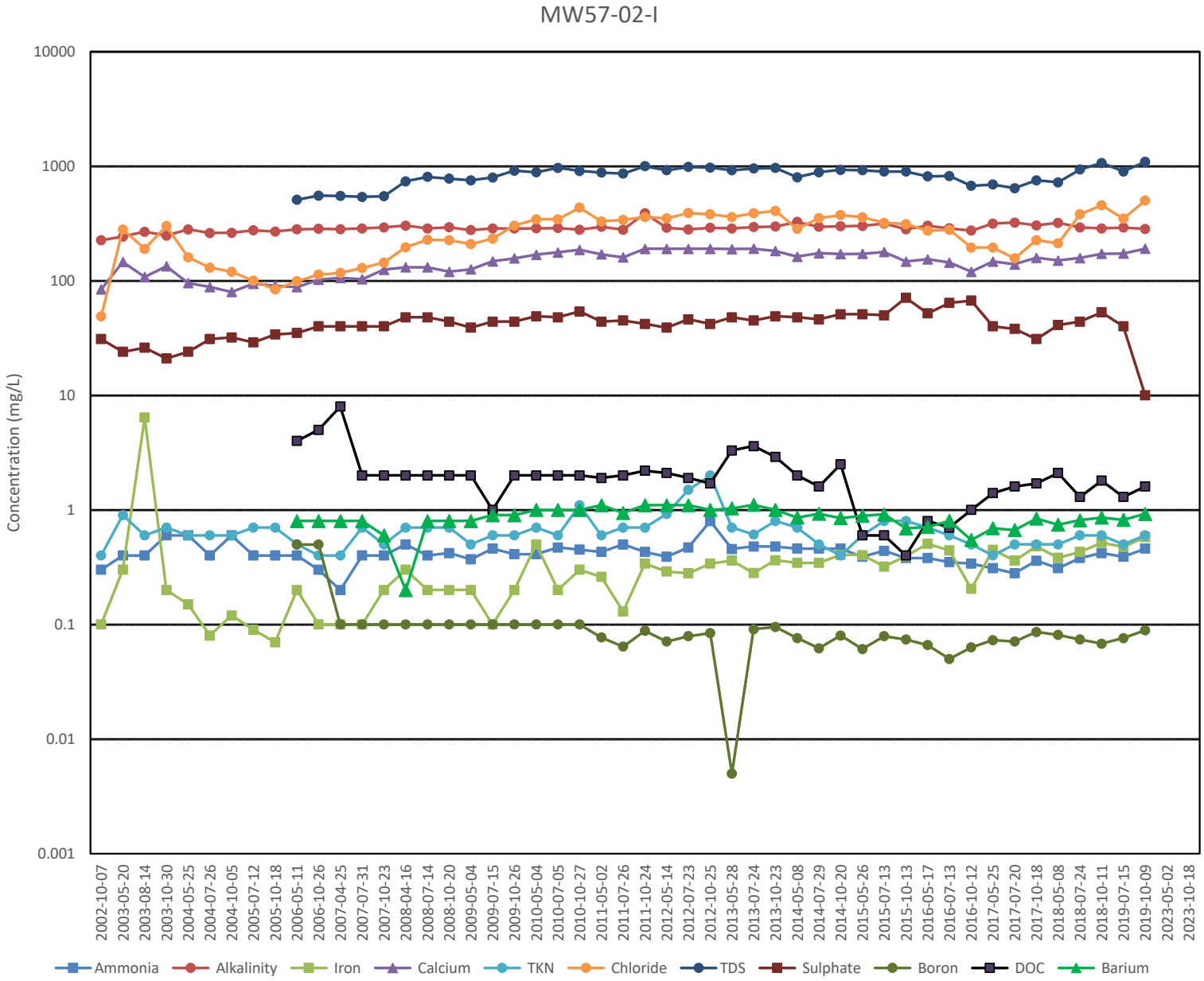
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW57-02-I
Concentration (mg/L)
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2019-10-09
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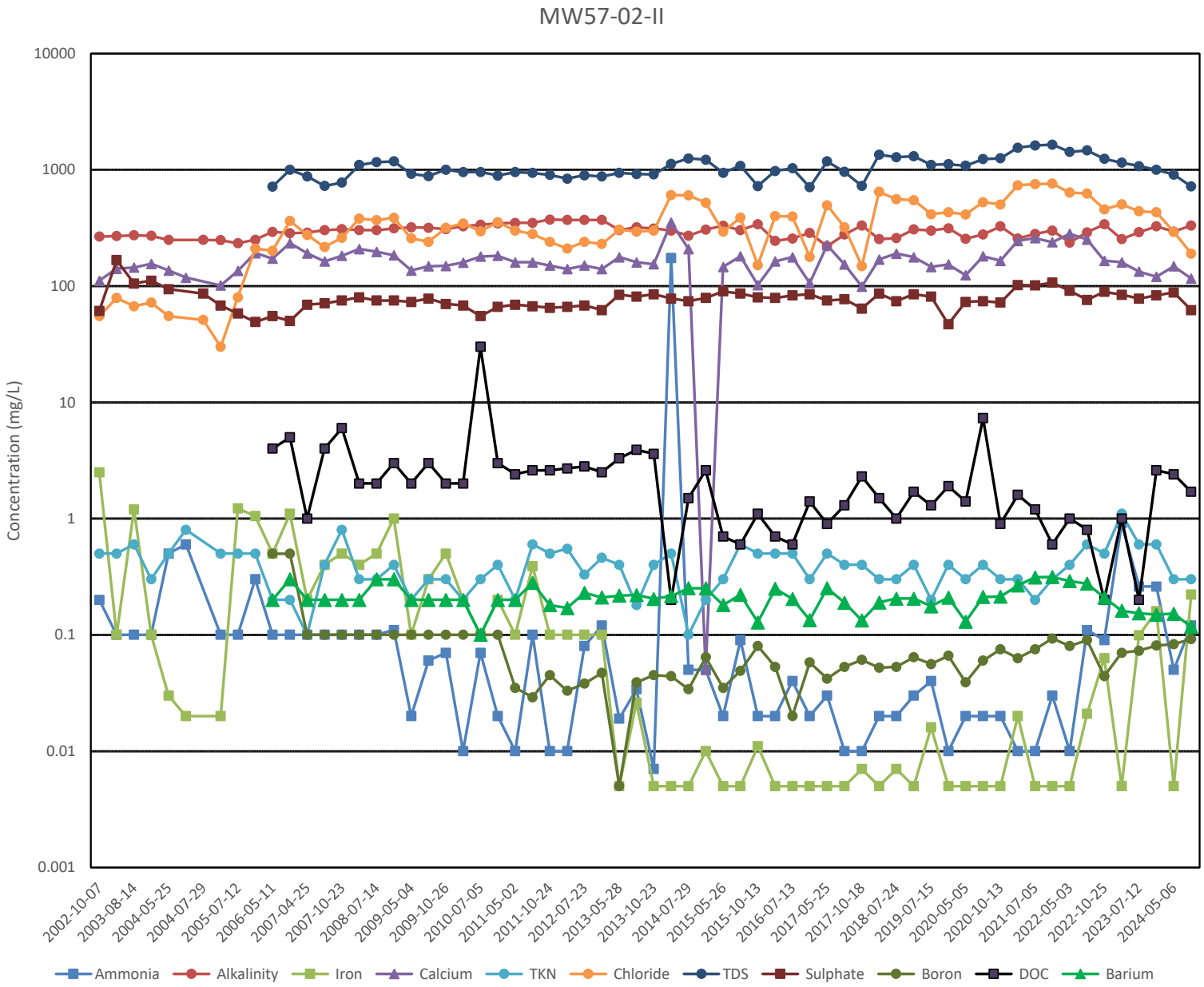
2023-10-18
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW57-02-II
Concentration (mg/L)
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0.01
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2002-10-07
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2005-07-12
2006-05-11
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2021-07-05
2022-05-03
2022-10-25
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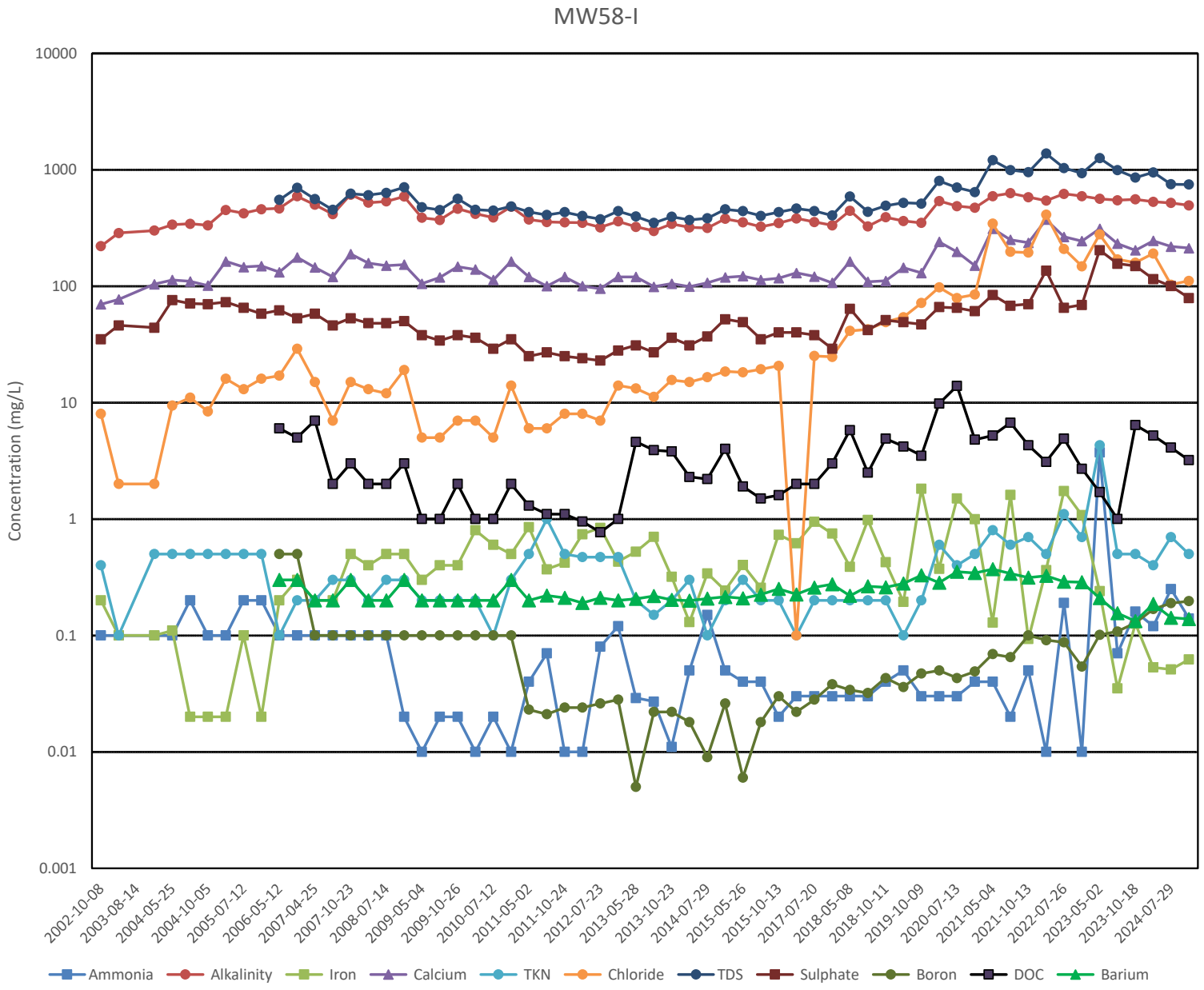
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW58-I
Concentration (mg/L)
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0.1
0.01
0.001
2002-10-08
2003-08-14
2004-05-25
2004-10-05
2005-07-12
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2007-10-23
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2023-05-02
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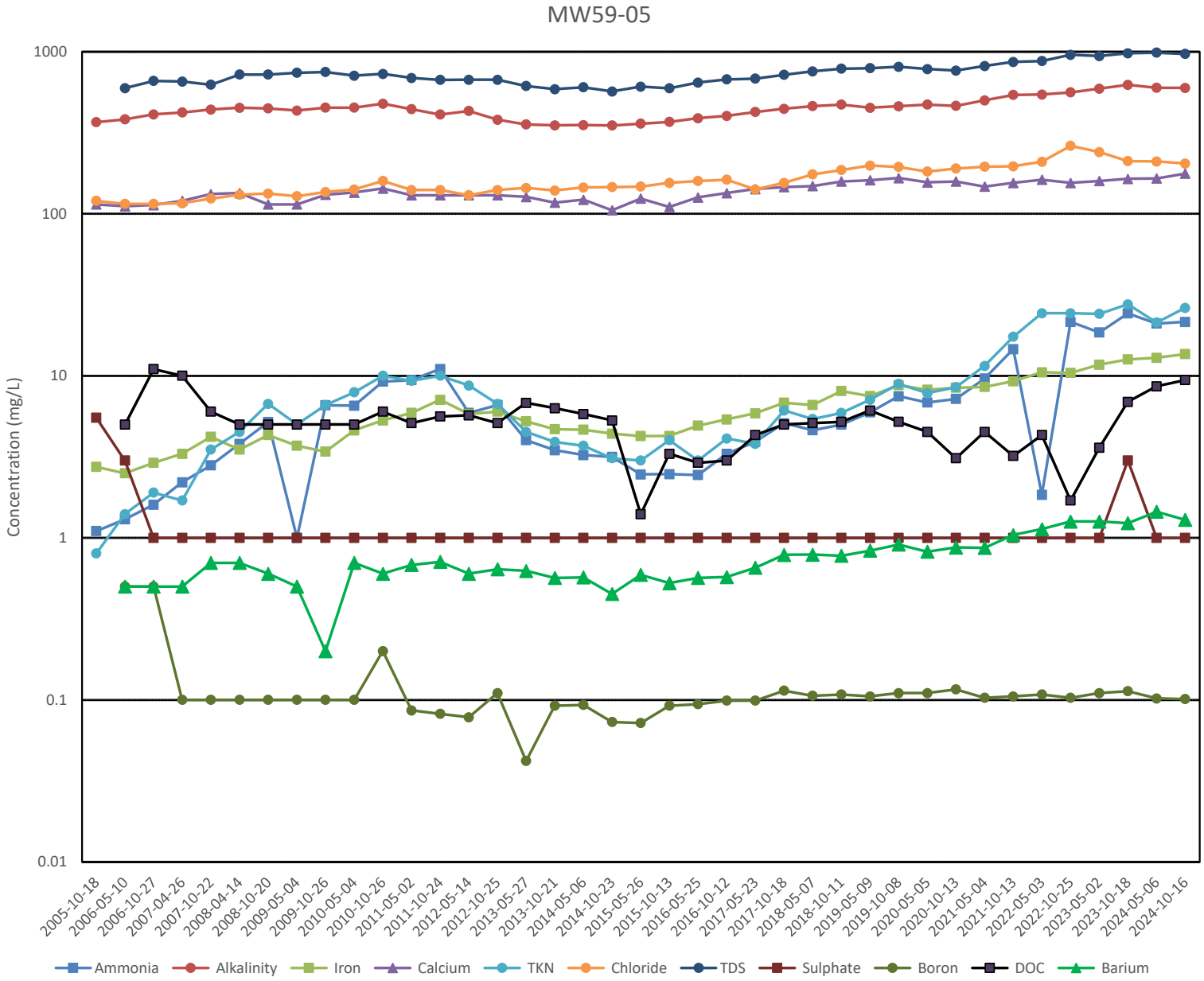
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW59-05
1000
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0.1
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Concentration (mg/L)
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2006-10-27
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2008-10-20
2009-05-04
2009-10-26
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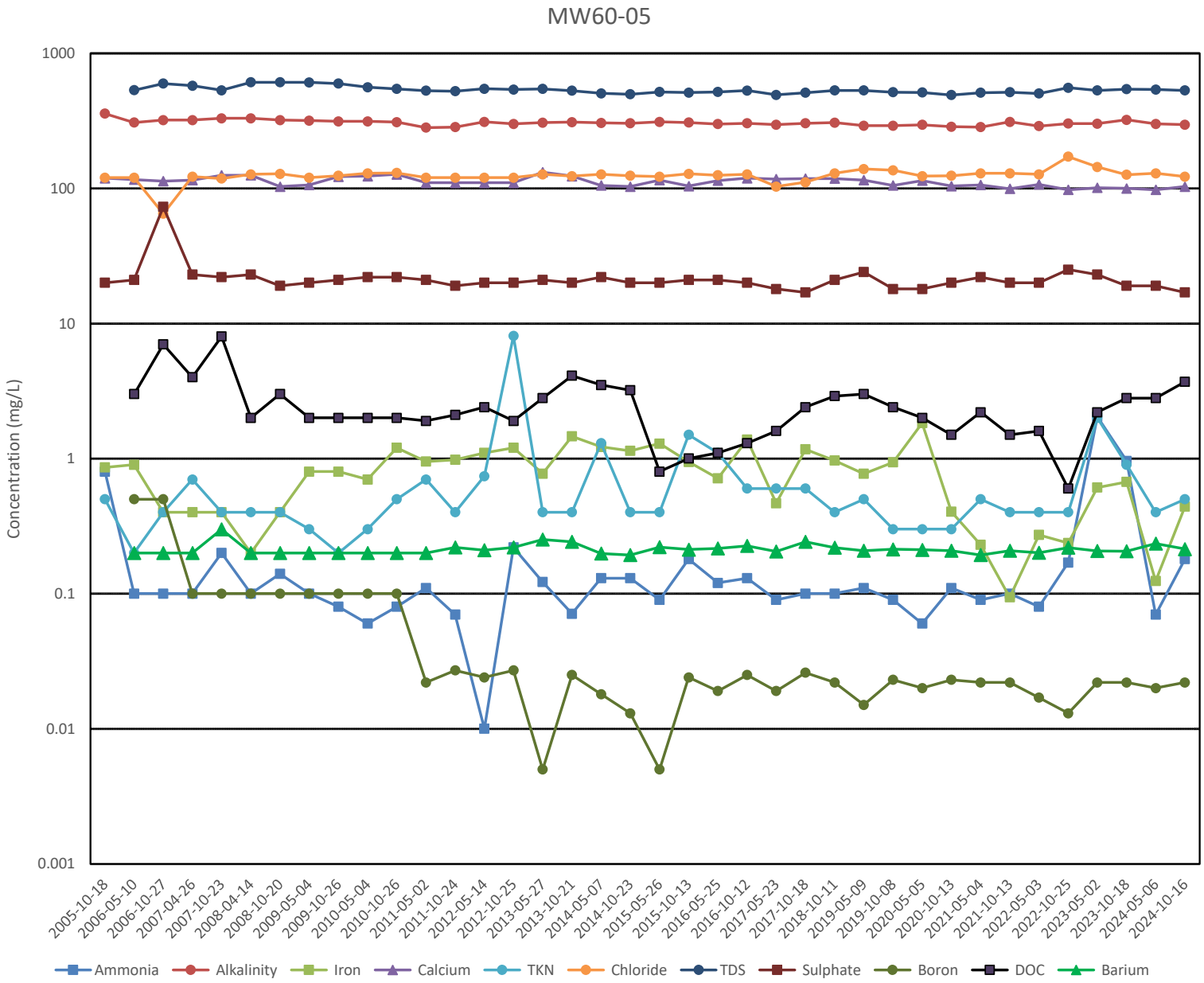
2024-05-06
2024-10-16
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW60-05
Concentration (mg/L)
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100
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0.01
0.001
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2006-05-10
2006-10-27
2007-04-26
2007-10-23
2008-04-14
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2009-05-04
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2023-10-18
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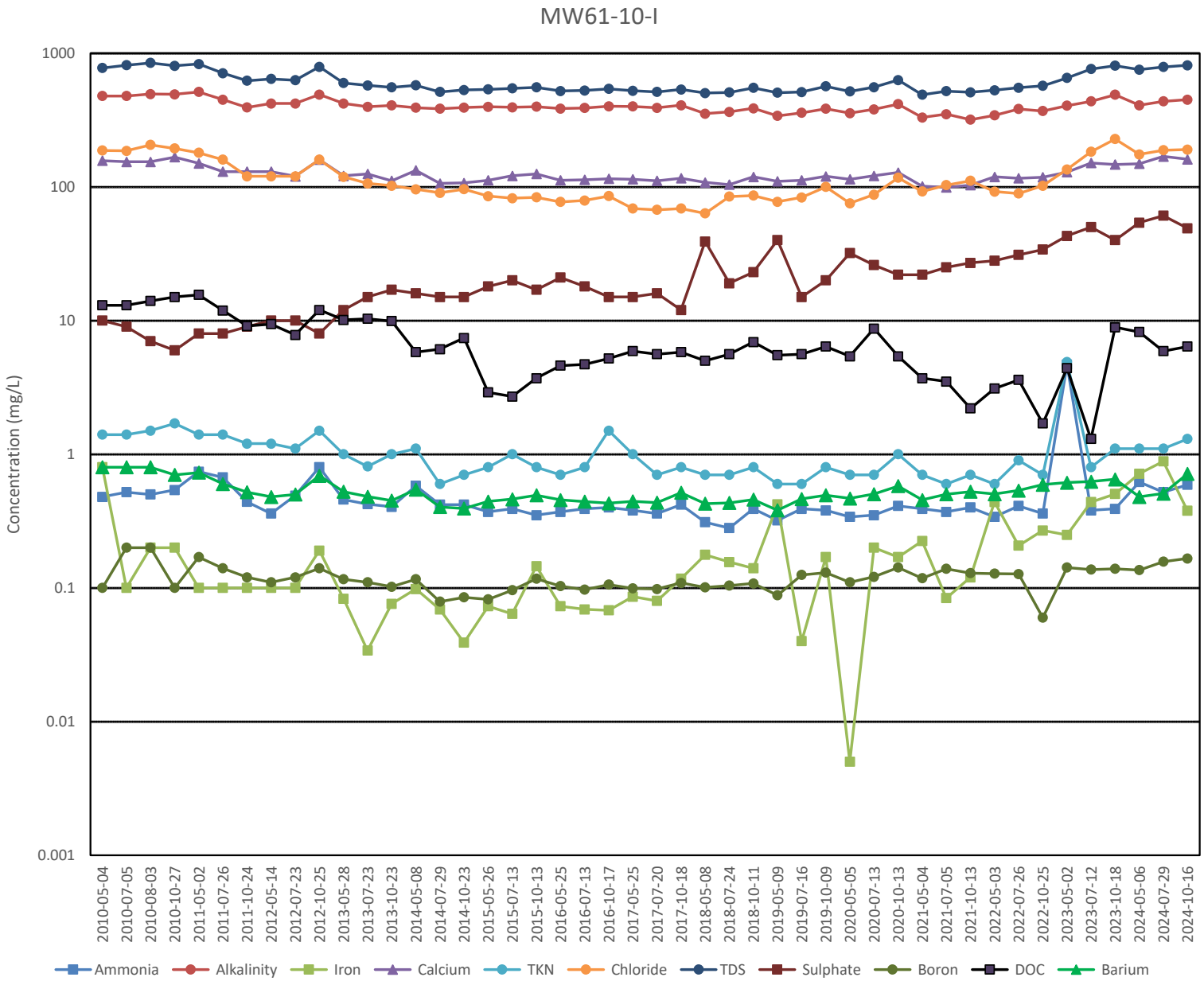
2024-10-16
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW61-10-I
Concentration (mg/L)
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2010-07-05
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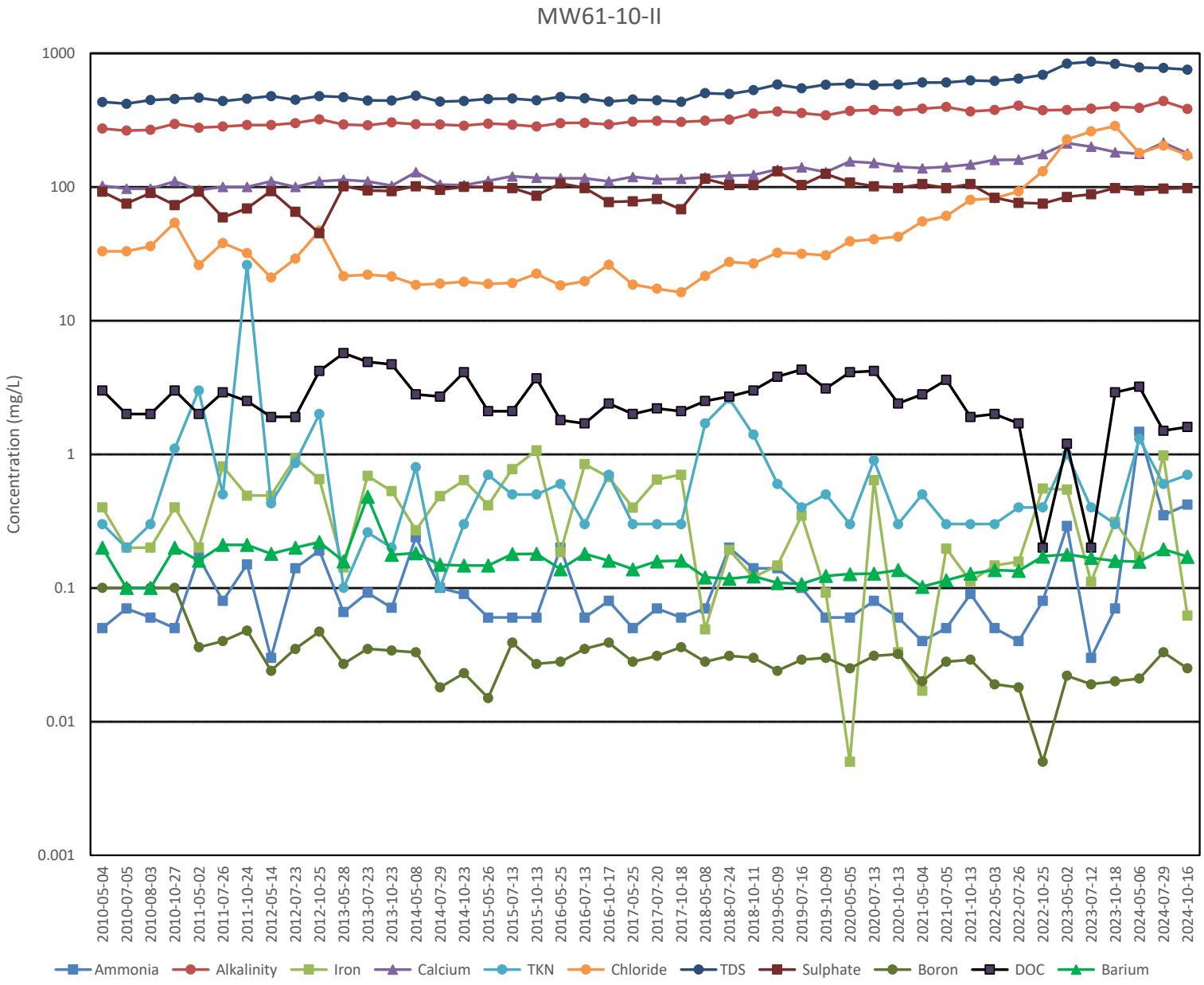
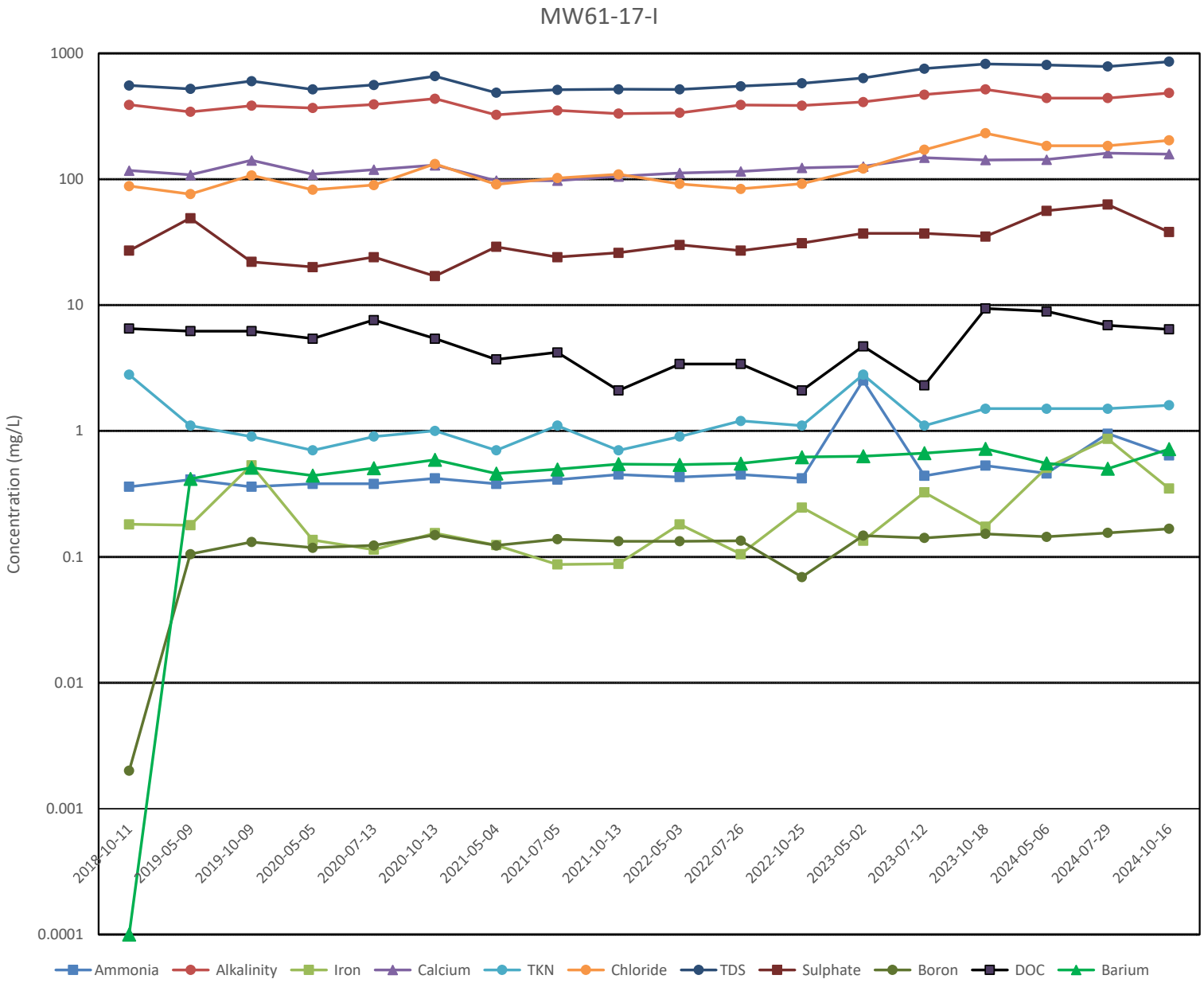
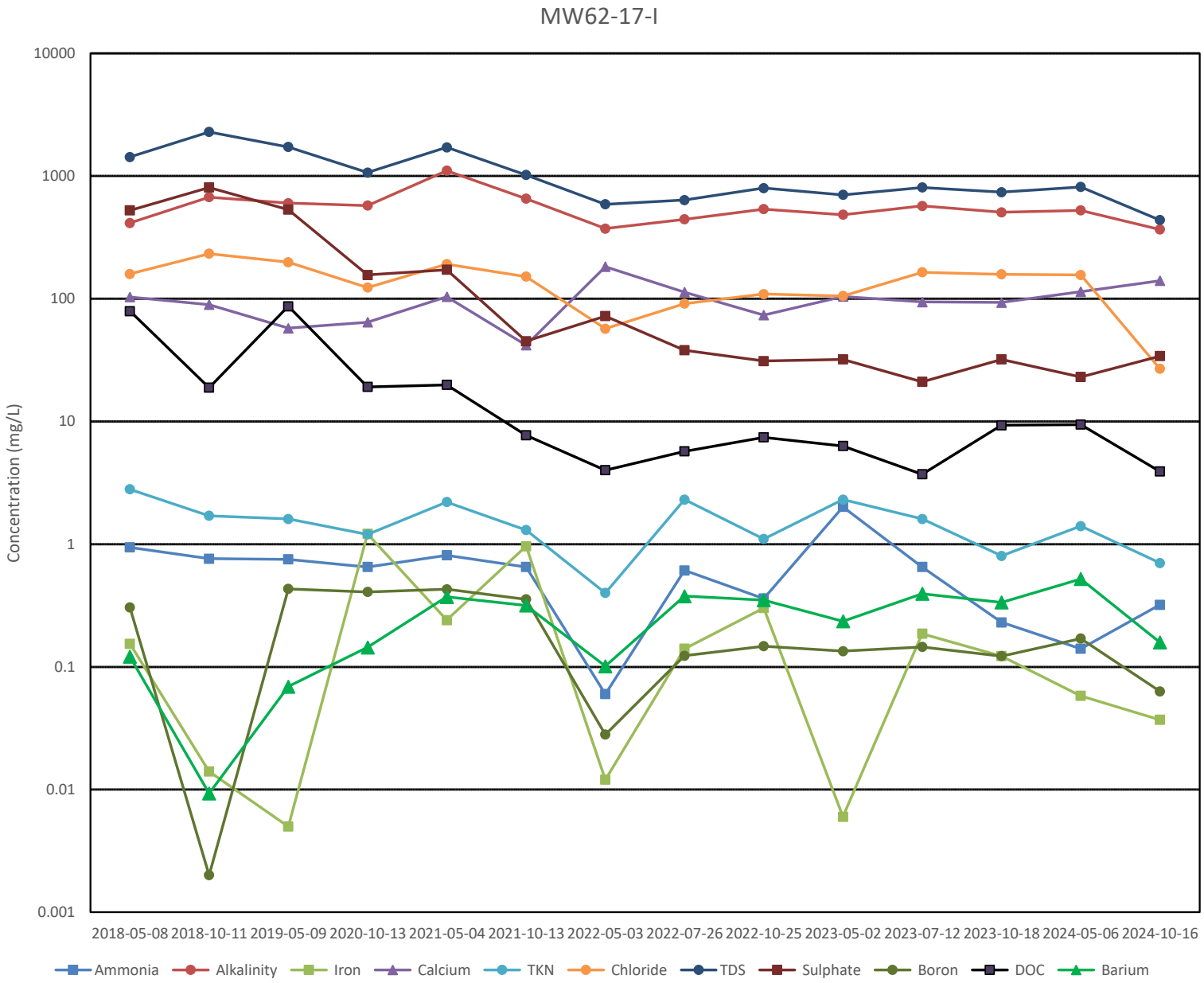
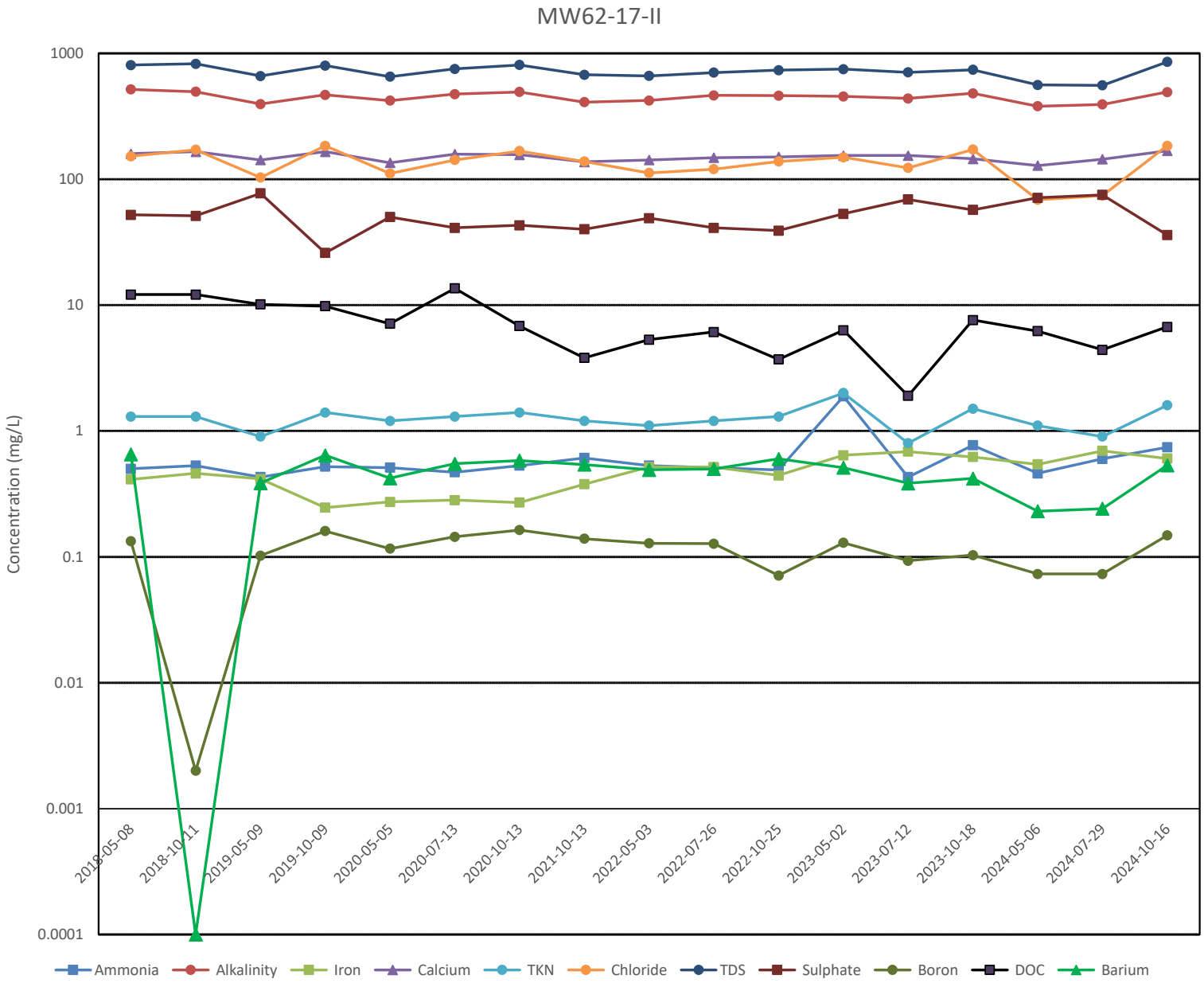
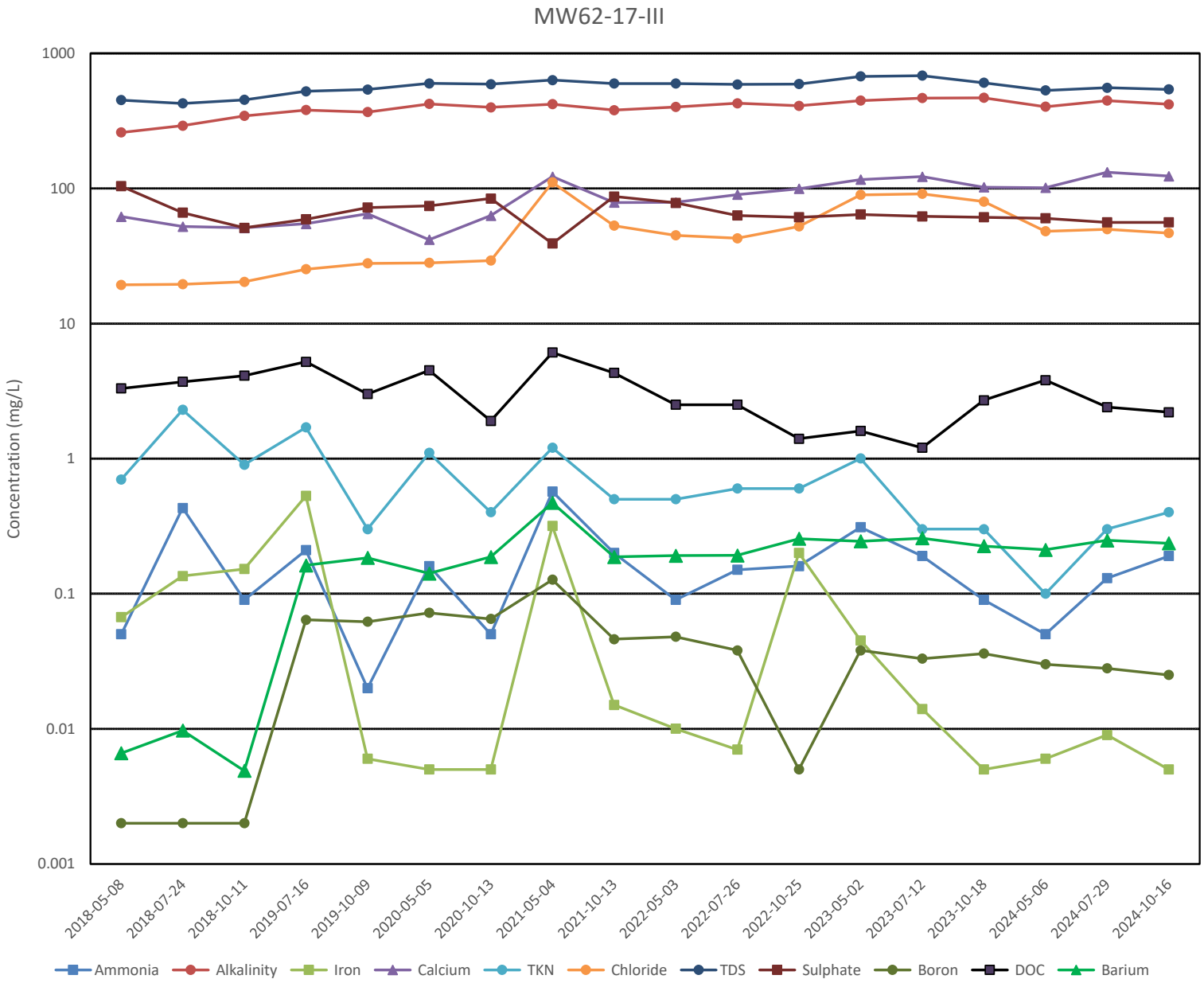
2021-07-05
2021-10-13
2022-05-03
2022-07-26
2022-10-25
2023-05-02
2023-07-12
2023-10-18
2024-05-06
2024-07-29
2024-10-16
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium

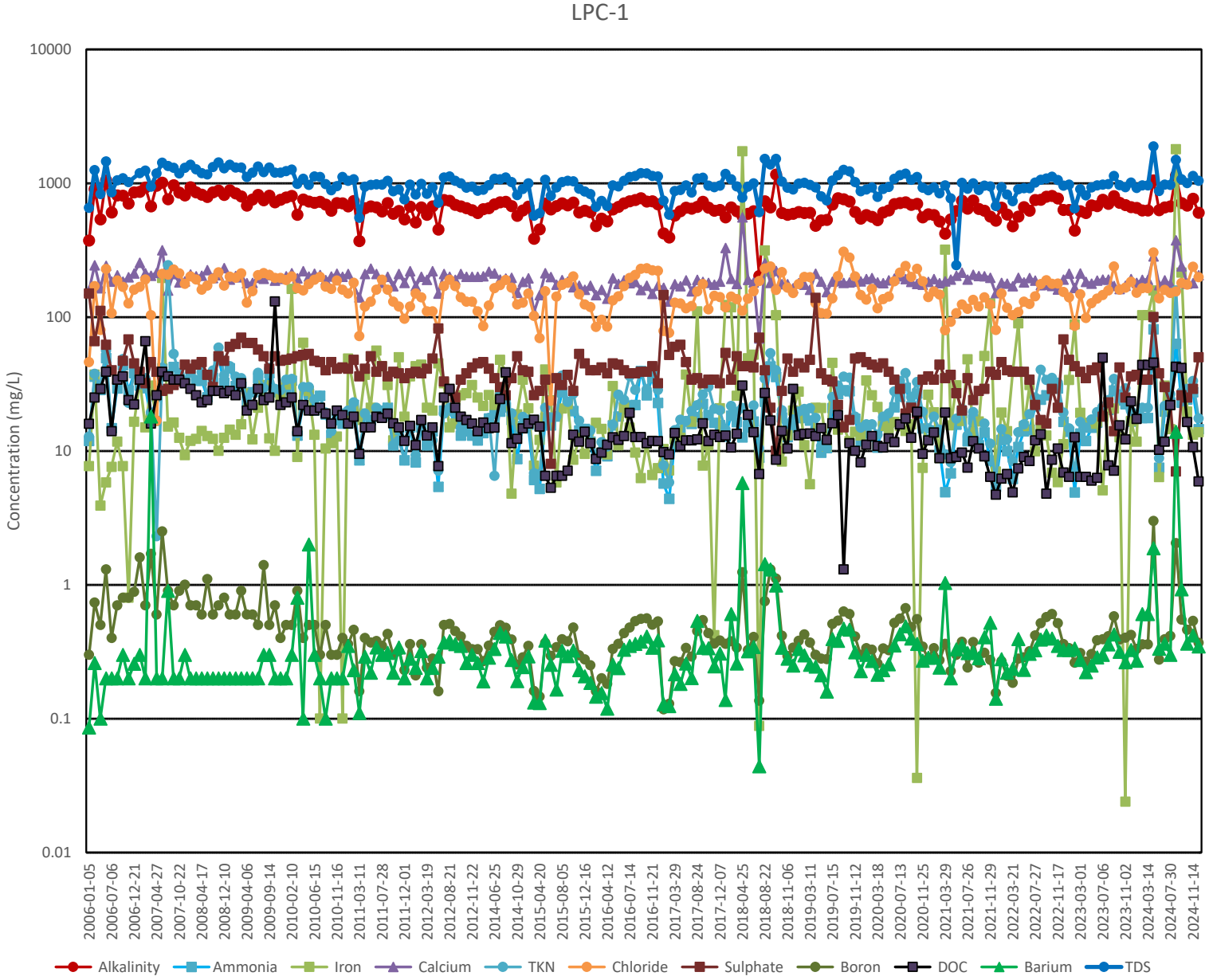

MW61-10-II
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
2010-05-04
2010-07-05
2010-08-03
2010-10-27
2011-05-02
2011-07-26
2011-10-24
2012-05-14
2012-07-23
2012-10-25
2013-05-28
2013-07-23
2013-10-23
2014-05-08
2014-07-29
2014-10-23
2015-05-26
2015-07-13
2015-10-13
2016-05-25
2016-07-13
2016-10-17
2017-05-25
2017-07-20
2017-10-18
2018-05-08
2018-07-24
2018-10-11
2019-05-09
2019-07-16
2019-10-09
2020-05-05
2020-07-13
2020-10-13
2021-05-04
2021-07-05
2021-10-13
2022-05-03
2022-07-26
2022-10-25
2023-05-02
2023-07-12
2023-10-18
2024-05-06
2024-07-29
2024-10-16
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium

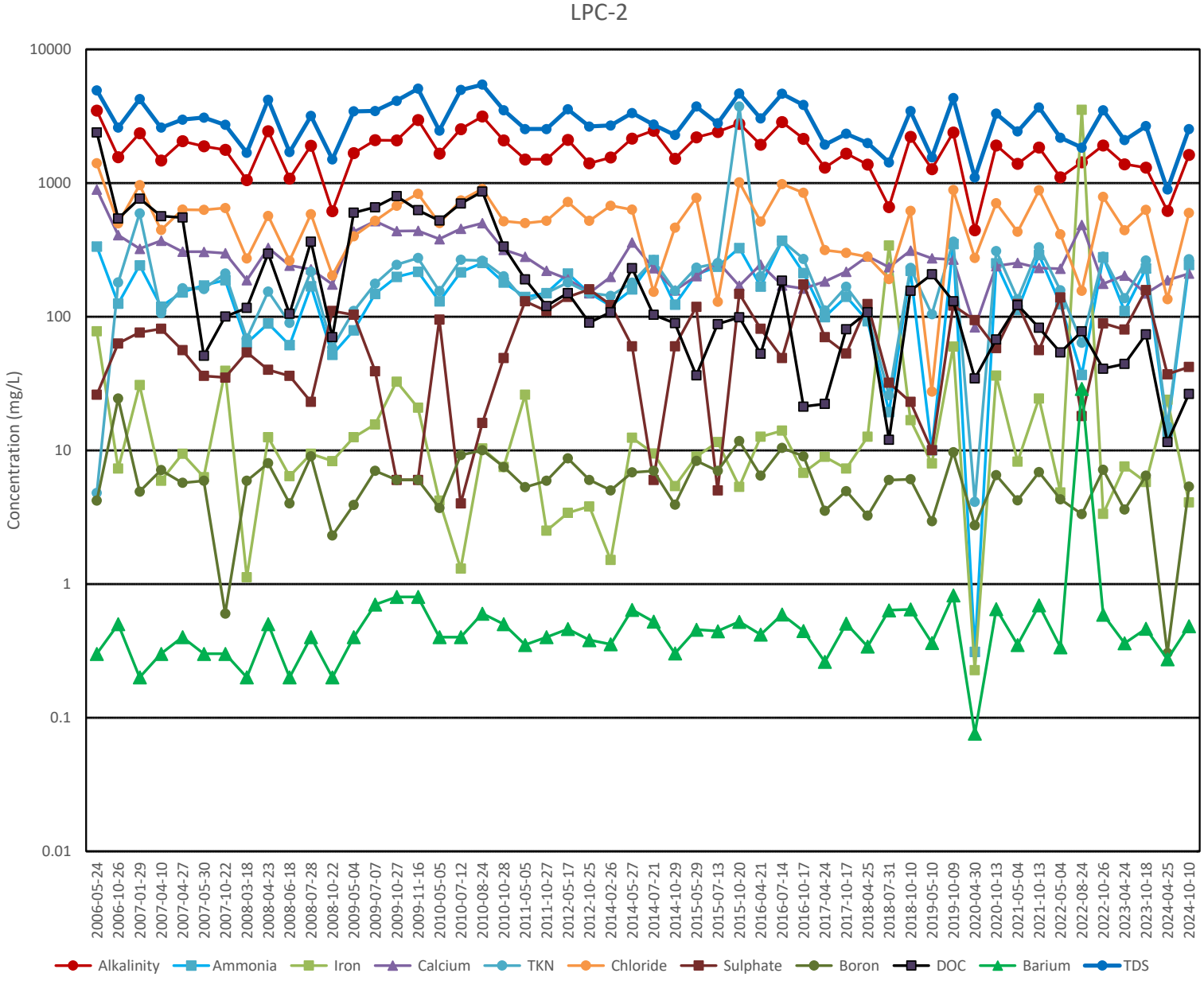

MW61-17-I
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
0.0001
2018-10-11
2019-05-09
2019-10-09
2020-05-05
2020-07-13
2020-10-13
2021-05-04
2021-07-05
2021-10-13
2022-05-03
2022-07-26
2022-10-25
2023-05-02
2023-07-12
2023-10-18
2024-05-06
2024-07-29
2024-10-16
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW62-17-I
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
0.001
2018-05-08
2018-10-11
2019-05-09
2020-10-13
2021-05-04
2021-10-13
2022-05-03
2022-07-26
2022-10-25
2023-05-02
2023-07-12
2023-10-18
2024-05-06
2024-10-16
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW62-17-II
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
0.0001
2018-05-08
2018-10-11
2019-05-09
2019-10-09
2020-05-05
2020-07-13
2020-10-13
2021-10-13
2022-05-03
2022-07-26
2022-10-25
2023-05-02
2023-07-12
2023-10-18
2024-05-06
2024-07-29
2024-10-16
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


MW62-17-III
1000
100
10
1
0.1
0.01
0.001
Concentration (mg/L)
2018-05-08
2018-07-24
2018-10-11
2019-07-16
2019-10-09
2020-05-05
2020-10-13
2021-05-04
2021-10-13
2022-05-03
2022-07-26
2022-10-25
2023-05-02
2023-07-12
2023-10-18
2024-05-06
2024-07-29
2024-10-16
Ammonia
Alkalinity
Iron
Calcium
TKN
Chloride
TDS
Sulphate
Boron
DOC
Barium


LPC-1
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
2006-01-05
2006-07-06
2006-12-21
2007-04-27
2007-10-22
2008-04-17
2008-12-10
2009-04-06
2009-09-14
2010-02-10
2010-06-15
2010-11-16
2011-03-11
2011-07-28
2011-12-01
2012-03-19
2012-08-21
2012-11-22
2014-06-25
2014-10-29
2015-04-20
2015-08-05
2015-12-16
2016-04-12
2016-07-14
2016-11-21
2017-03-29
2017-08-24
2017-12-07
2018-04-25
2018-08-22
2018-11-06
2019-03-11
2019-07-15
2019-11-12
2020-03-18
2020-07-13
2020-11-25
2021-03-29
2021-07-26
2021-11-29
2022-03-21
2022-07-27
2022-11-17
2023-03-01
2023-07-06
2023-11-02
2024-03-14
2024-07-30
2024-11-14
Alkalinity
Ammonia
Iron
Calcium
TKN
Chloride
Sulphate
Boron
DOC
Barium
TDS


LPC-2
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
2006-05-24
2006-10-26
2007-01-29
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2007-04-27
2007-05-30
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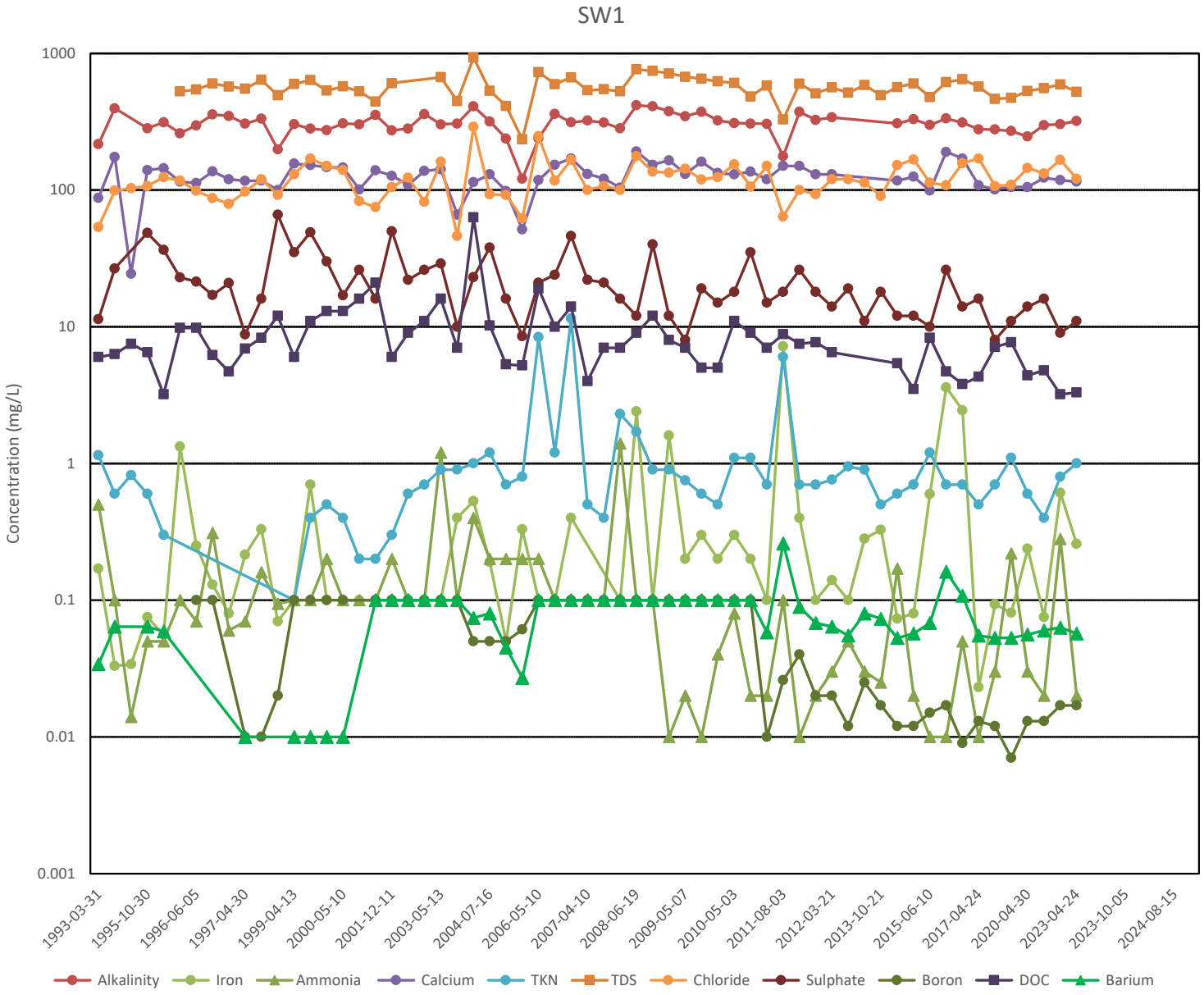
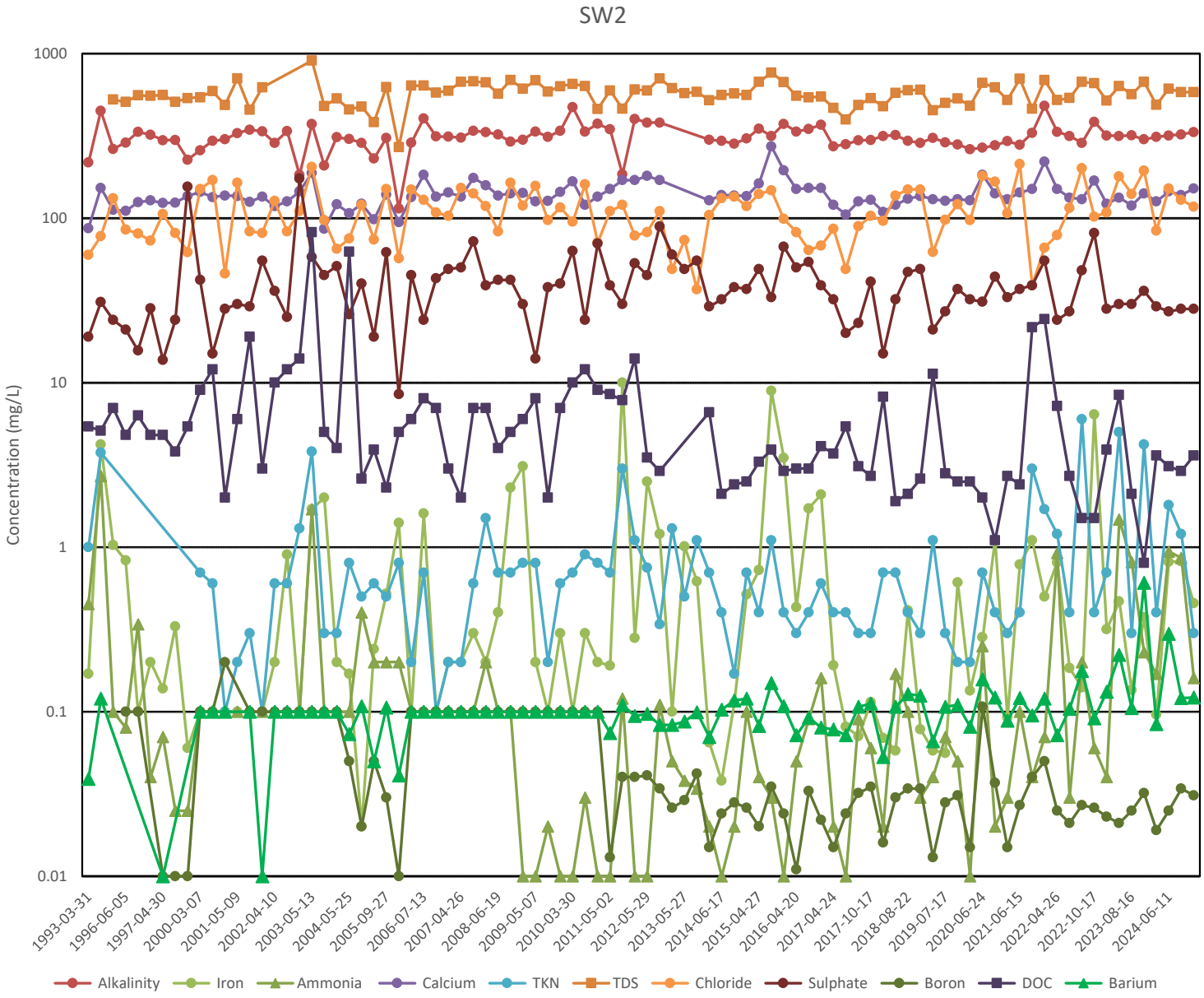
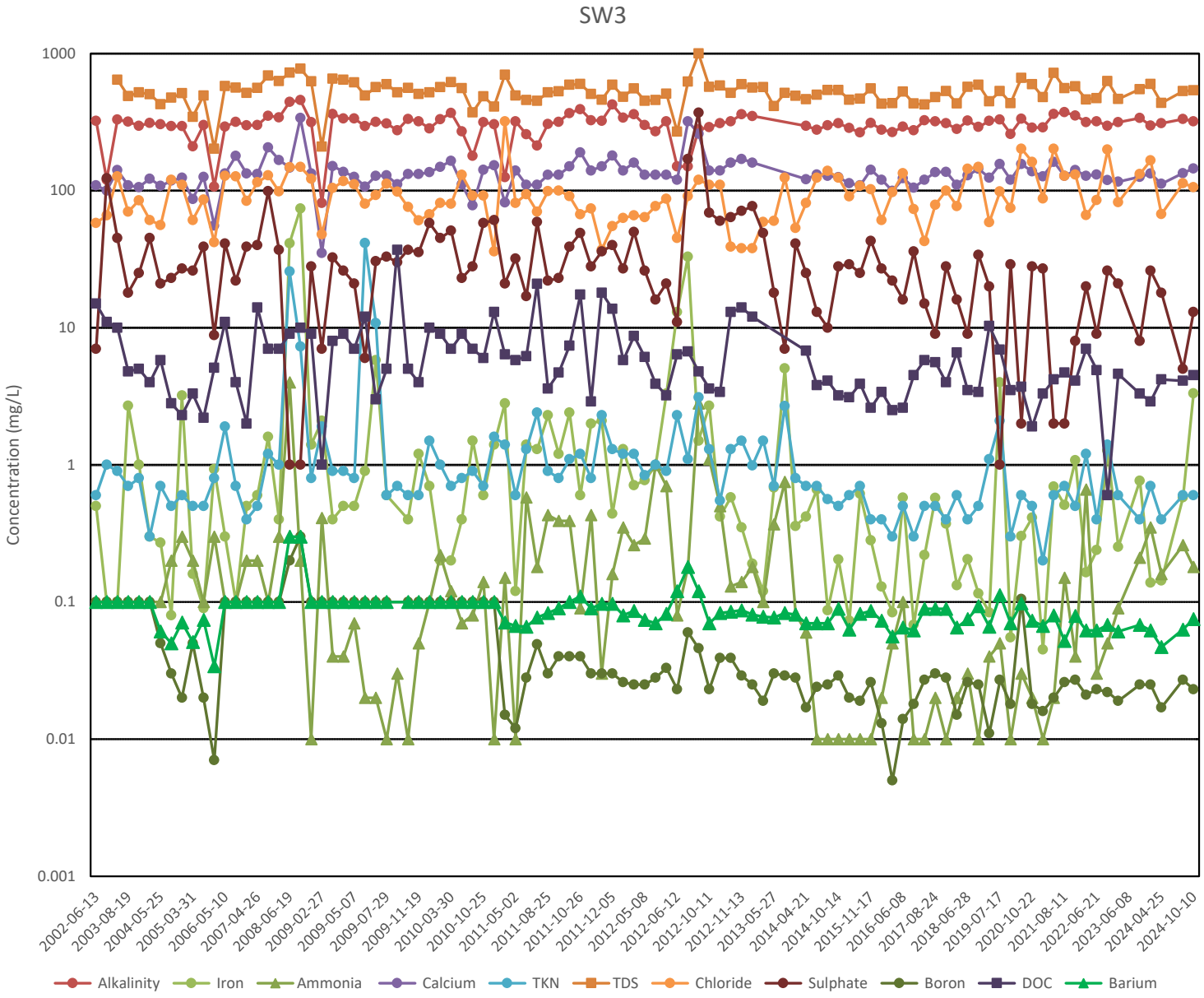
2008-03-18
2008-04-23
2008-06-18
2008-07-28
2008-10-22
2009-05-04
2009-07-07
2009-10-27
2009-11-16
2010-05-05
2010-07-12
2010-08-24
2010-10-28
2011-05-05
2011-10-27
2012-05-17
2012-10-25
2014-02-26
2014-05-27
2014-07-21
2014-10-29
2015-05-29
2015-07-13
2015-10-20
2016-04-21
2016-07-14
2016-10-17
2017-04-24
2017-10-17
2018-04-25
2018-07-31
2018-10-10
2019-05-10
2019-10-09
2020-04-30
2020-10-13
2021-05-04
2021-10-13
2022-05-04
2022-08-24
2022-10-26
2023-04-24
2023-10-18
2024-04-25
2024-10-10
Alkalinity
Ammonia
Iron
Calcium
TKN
Chloride
Sulphate
Boron
DOC
Barium
TDS


SW1
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
1993-03-31
1995-10-30
1996-06-05
1997-04-30
1999-04-13
2000-05-10
2001-12-11
2003-05-13
2004-07-16
2006-05-10
2007-04-10
2008-06-19
2009-05-07
2010-05-03
2011-08-03
2012-03-21
2013-10-21
2015-06-10
2017-04-24
2020-04-30
2023-04-24
2023-10-05
2024-08-15
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium


SW2
Concentration (mg/L)
1000
100
10
1
0.1
0.01
1993-03-31
1996-06-05
1997-04-30
2000-03-07
2001-05-09
2002-04-10
2003-05-13
2004-05-25
2005-09-27
2006-07-13
2007-04-26
2008-06-19
2009-05-07
2010-03-30
2011-05-02
2012-05-29
2013-05-27
2014-06-17
2015-04-27
2016-04-20
2017-04-24
2017-10-17
2018-08-22
2019-07-17
2020-06-24
2021-06-15
2022-04-26
2022-10-17
2023-08-16
2024-06-11
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium


SW3
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
2002-06-13
2003-08-19
2004-05-25
2005-03-31
2006-05-10
2007-04-26
2008-06-19
2009-02-27
2009-05-07
2009-07-29
2009-11-19
2010-03-30
2010-10-25
2011-05-02
2011-08-25
2011-10-26
2011-12-05
2012-05-08
2012-06-12
2012-10-11
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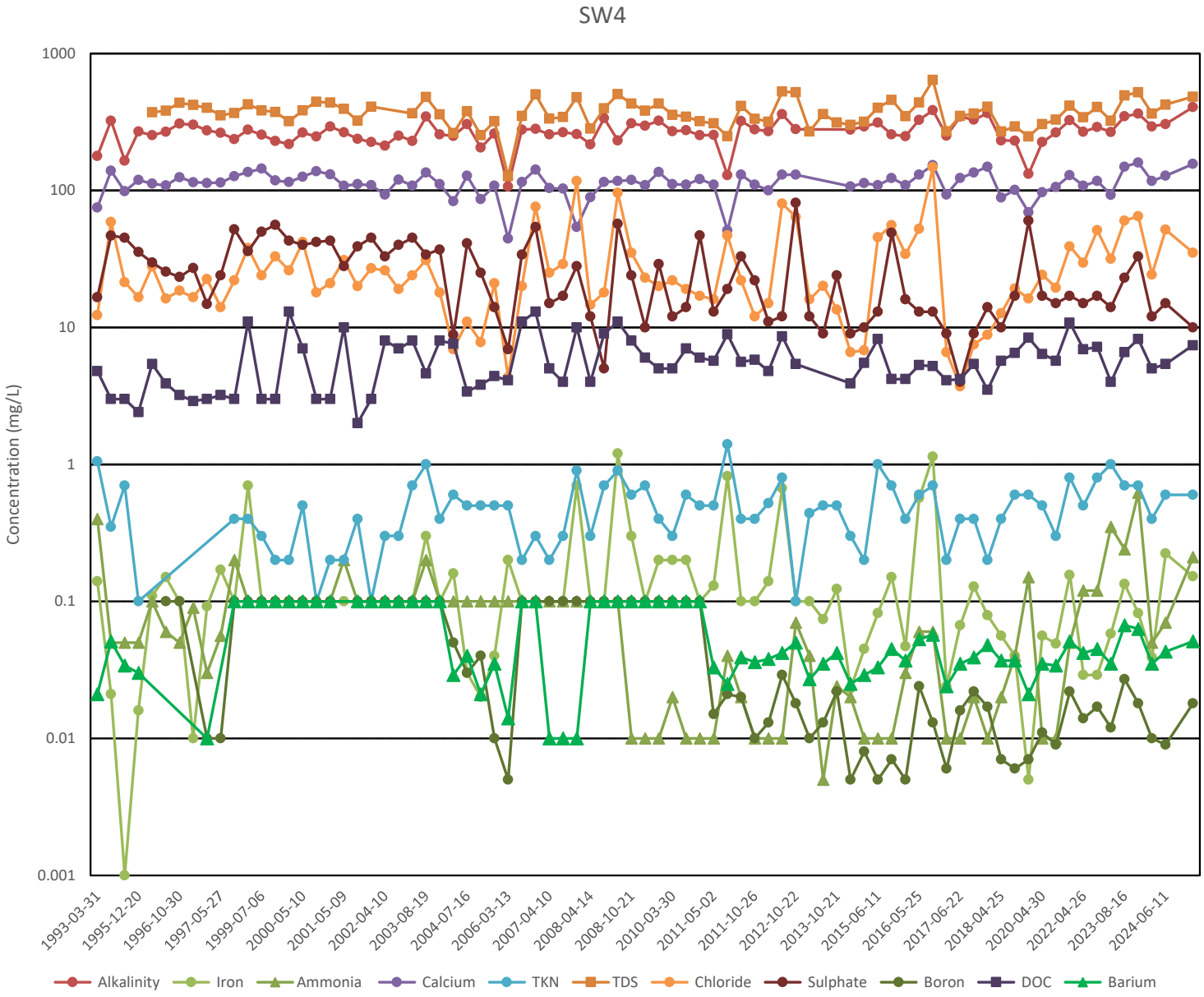
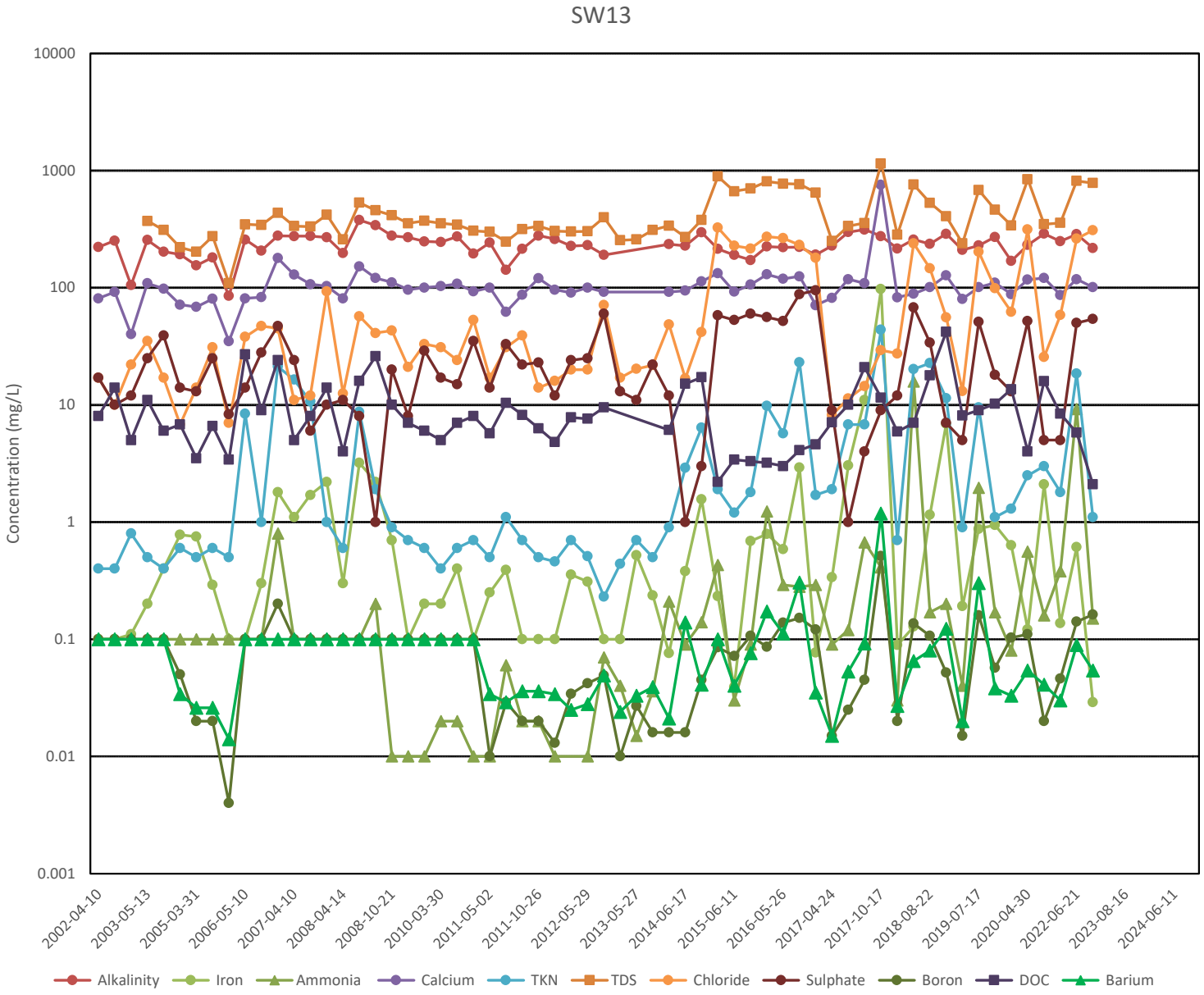
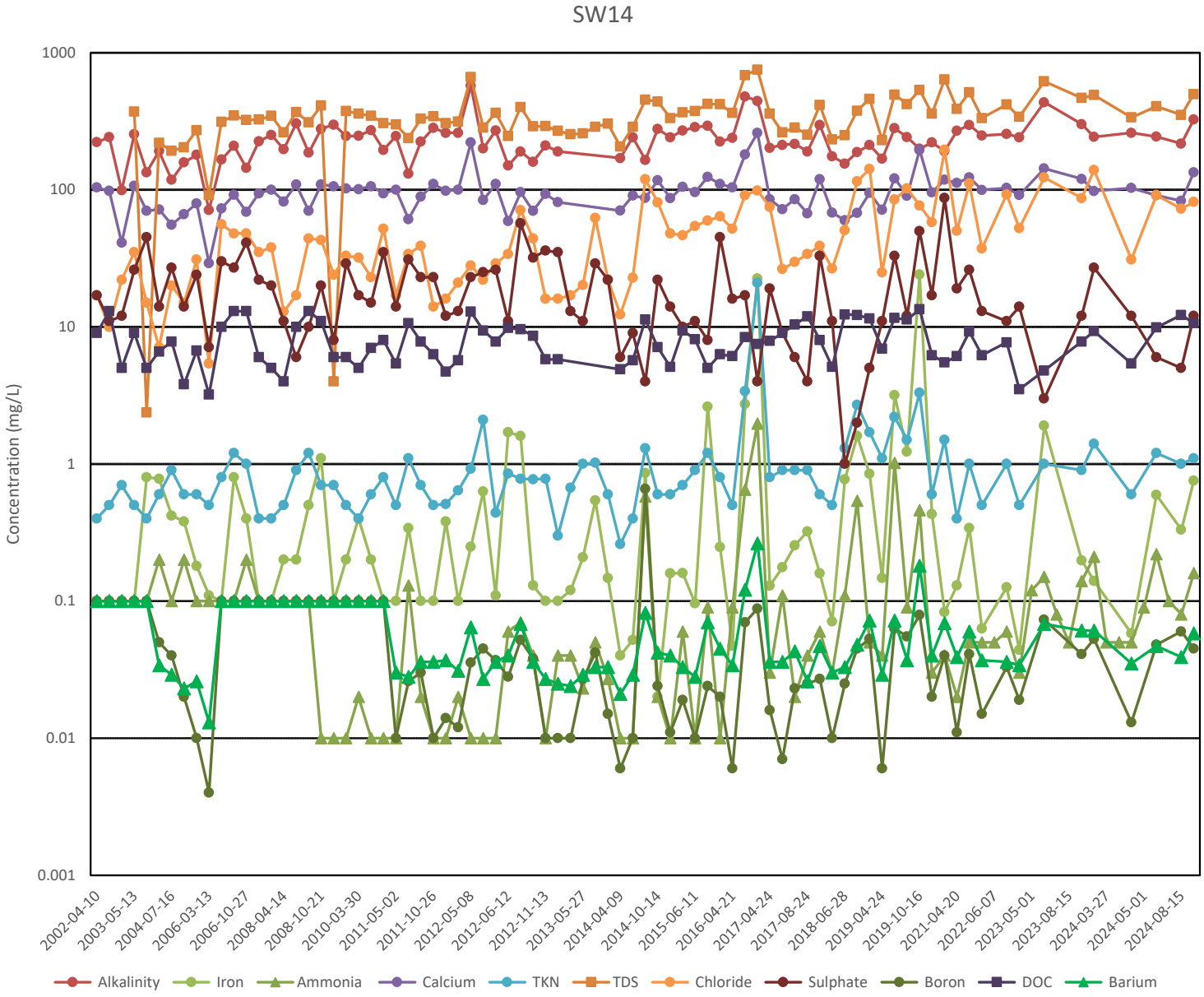
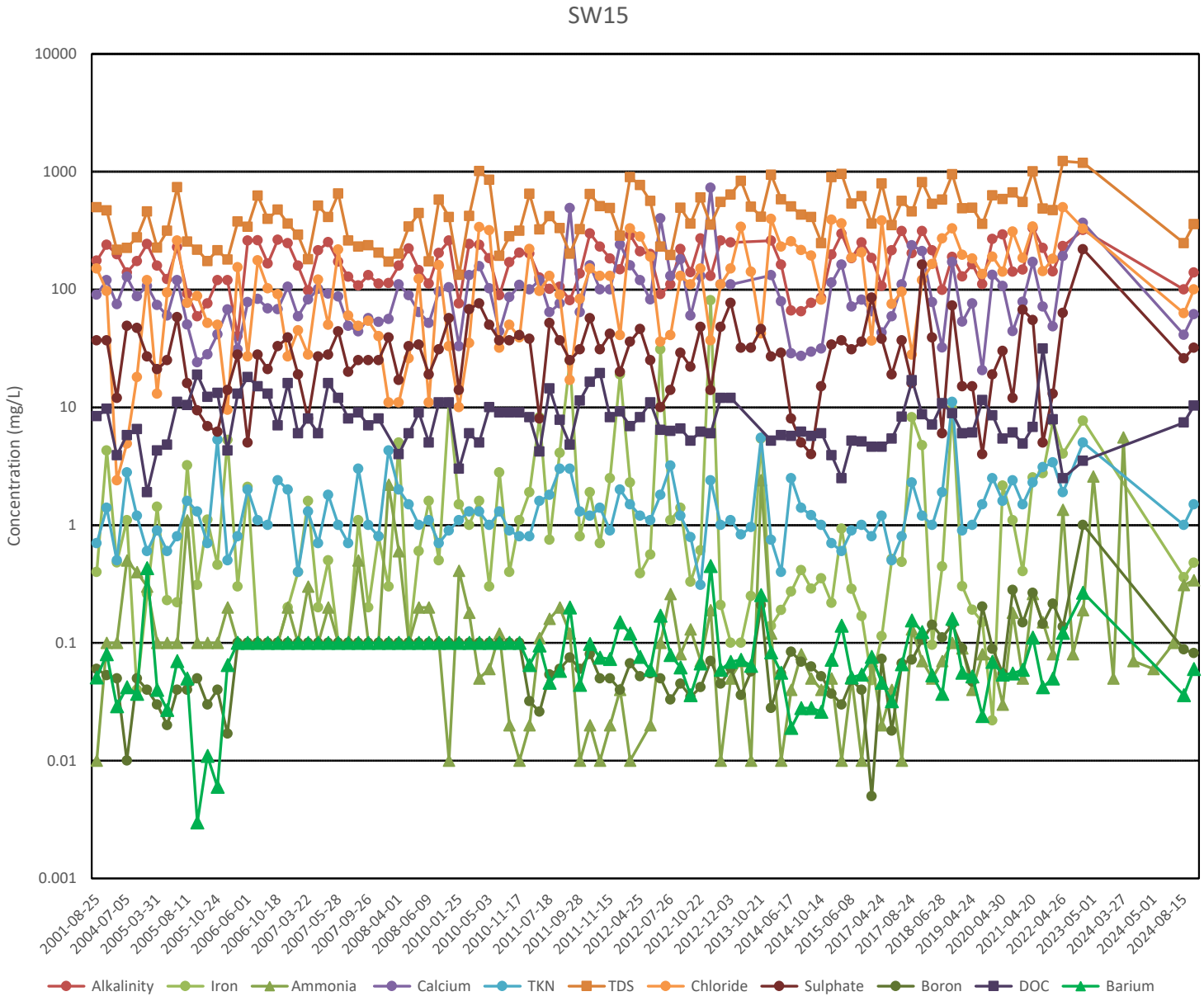
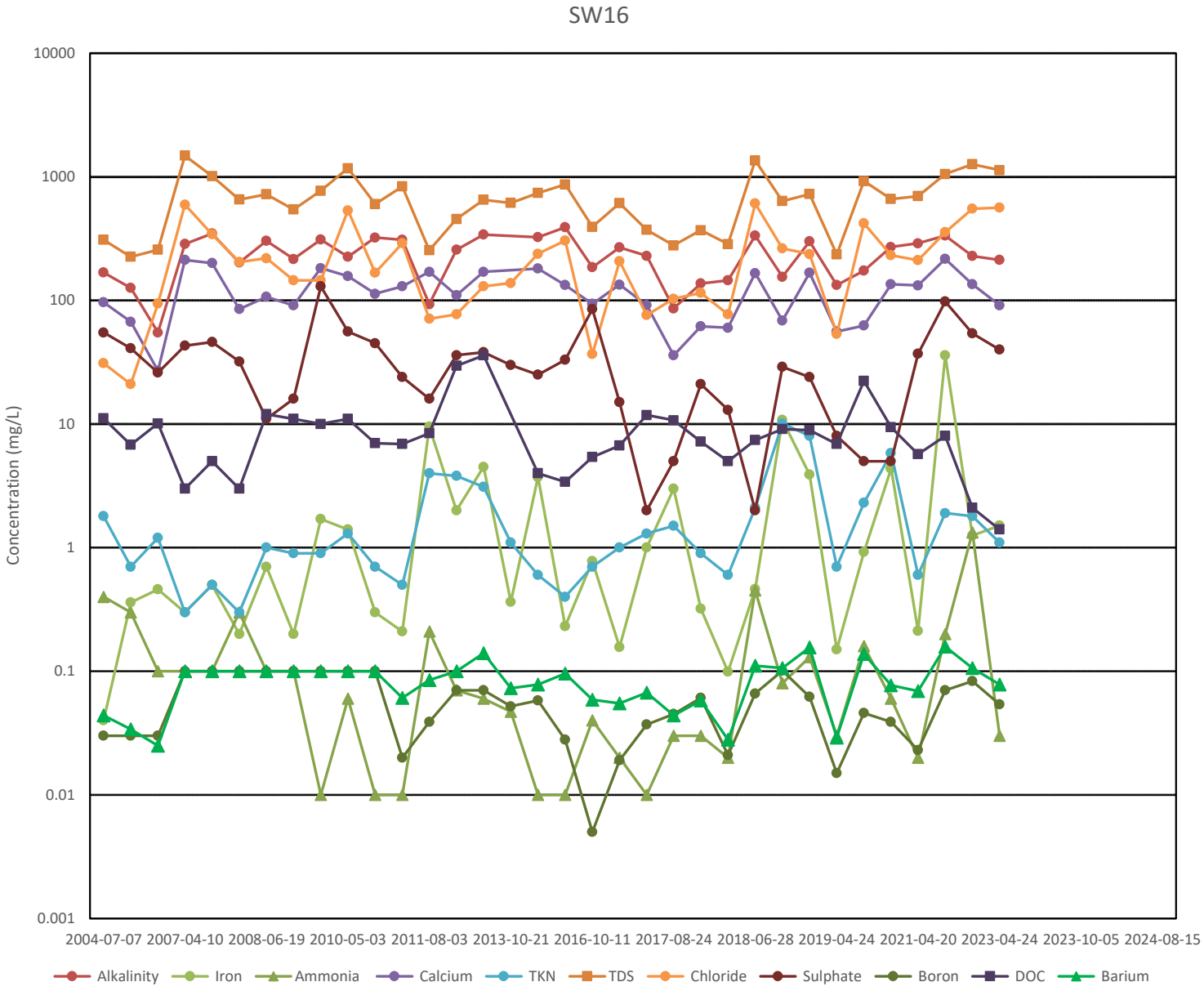
2013-05-27
2014-04-21
2014-10-14
2015-11-17
2016-06-08
2017-08-24
2018-06-28
2019-07-17
2020-10-22
2021-08-11
2022-06-21
2023-06-08
2024-04-25
2024-10-10
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium

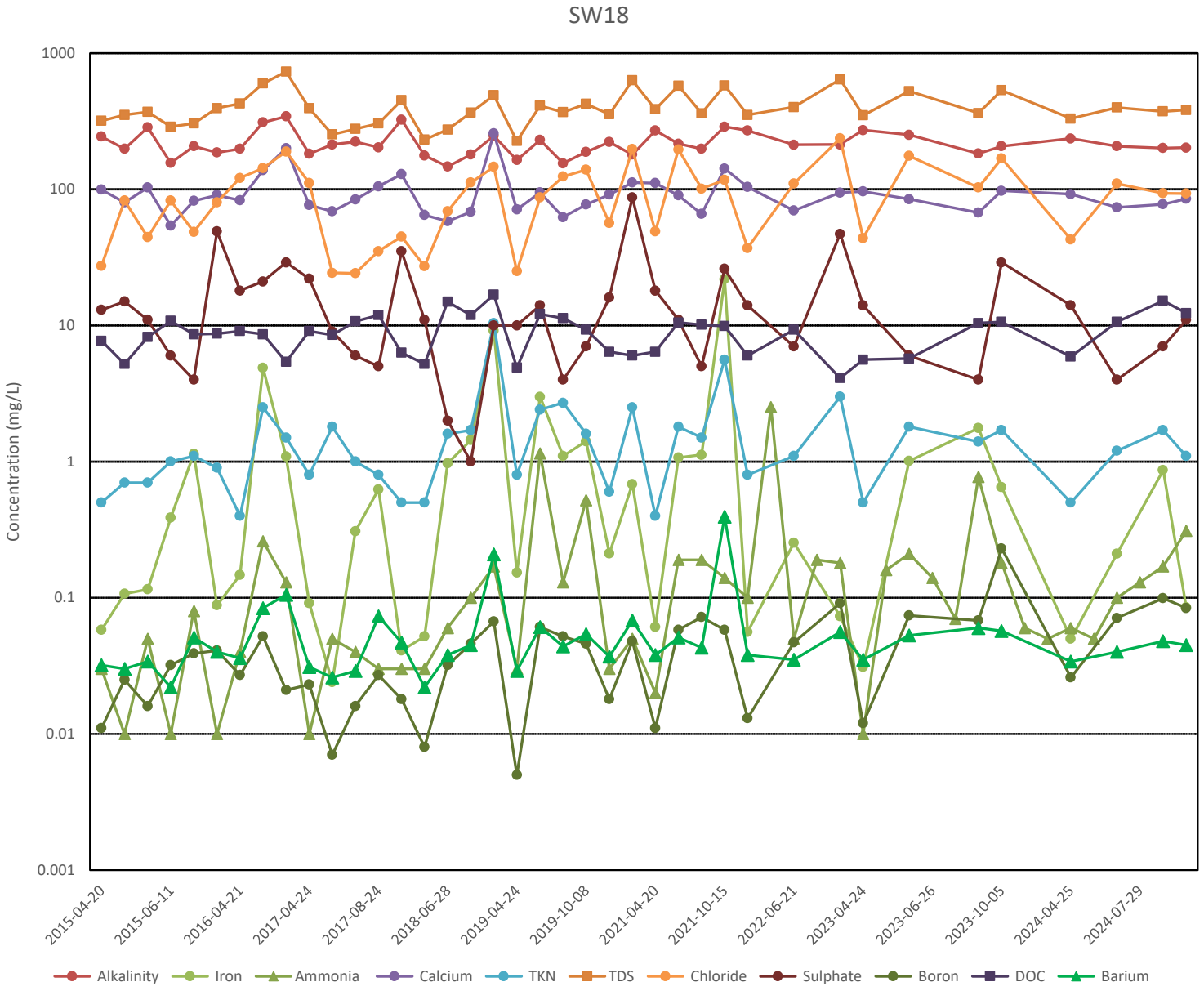

SW4
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
1993-03-31
1995-12-20
1996-10-30
1997-05-27
1999-07-06
2000-05-10
2001-05-09
2002-04-10
2003-08-19
2004-07-16
2006-03-13
2007-04-10
2008-04-14
2008-10-21
2010-03-30
2011-05-02
2011-10-26
2012-10-22
2013-10-21
2015-06-11
2016-05-25
2017-06-22
2018-04-25
2020-04-30
2022-04-26
2023-08-16
2024-06-11
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium

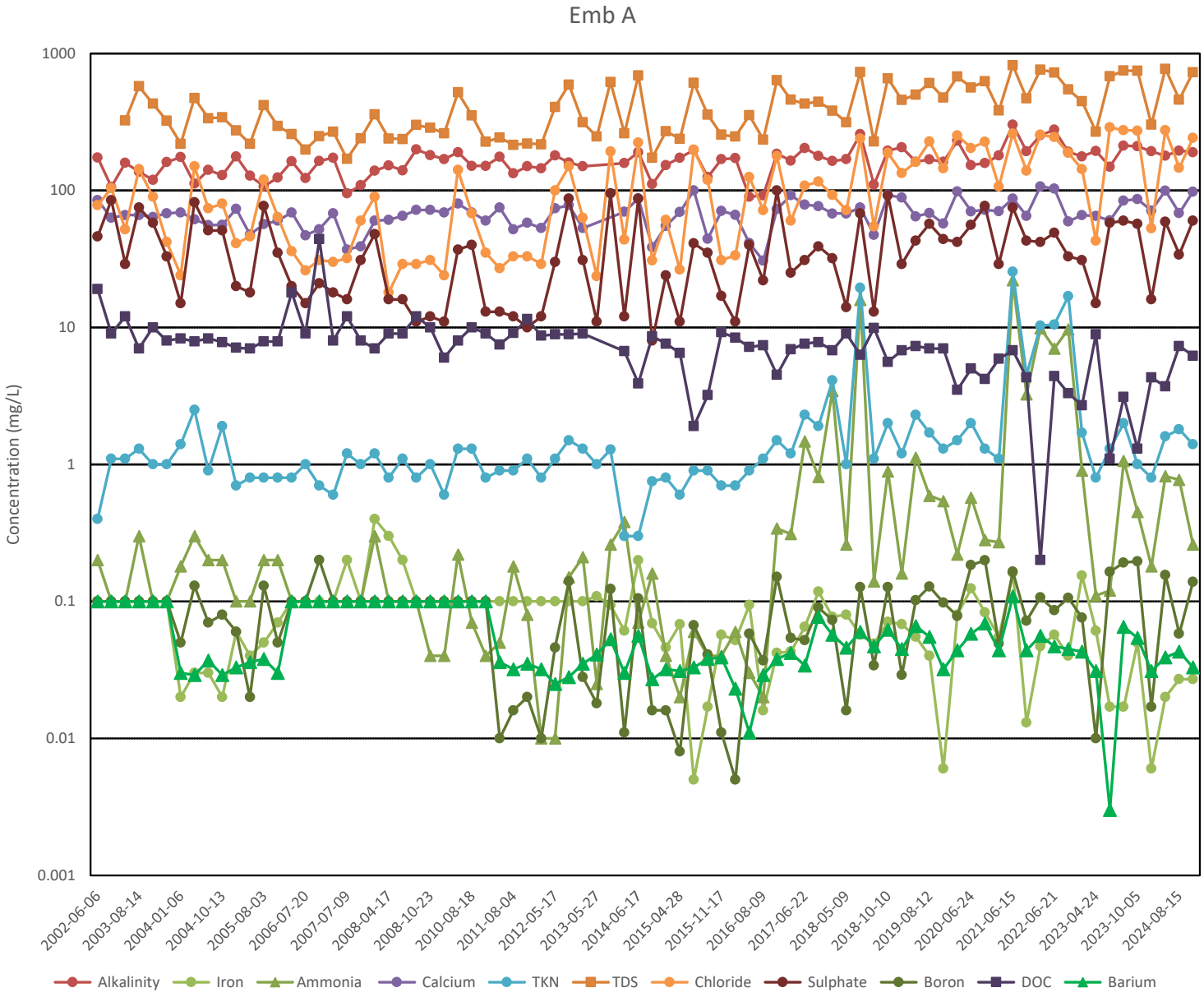

SW13
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
0.001
2002-04-10
2003-05-13
2005-03-31
2006-05-10
2007-04-10
2008-04-14
2008-10-21
2010-03-30
2011-05-02
2011-10-26
2012-05-29
2013-05-27
2014-06-17
2015-06-11
2016-05-26
2017-04-24
2017-10-17
2018-08-22
2019-07-17
2020-04-30
2022-06-21
2023-08-16
2024-06-11
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium

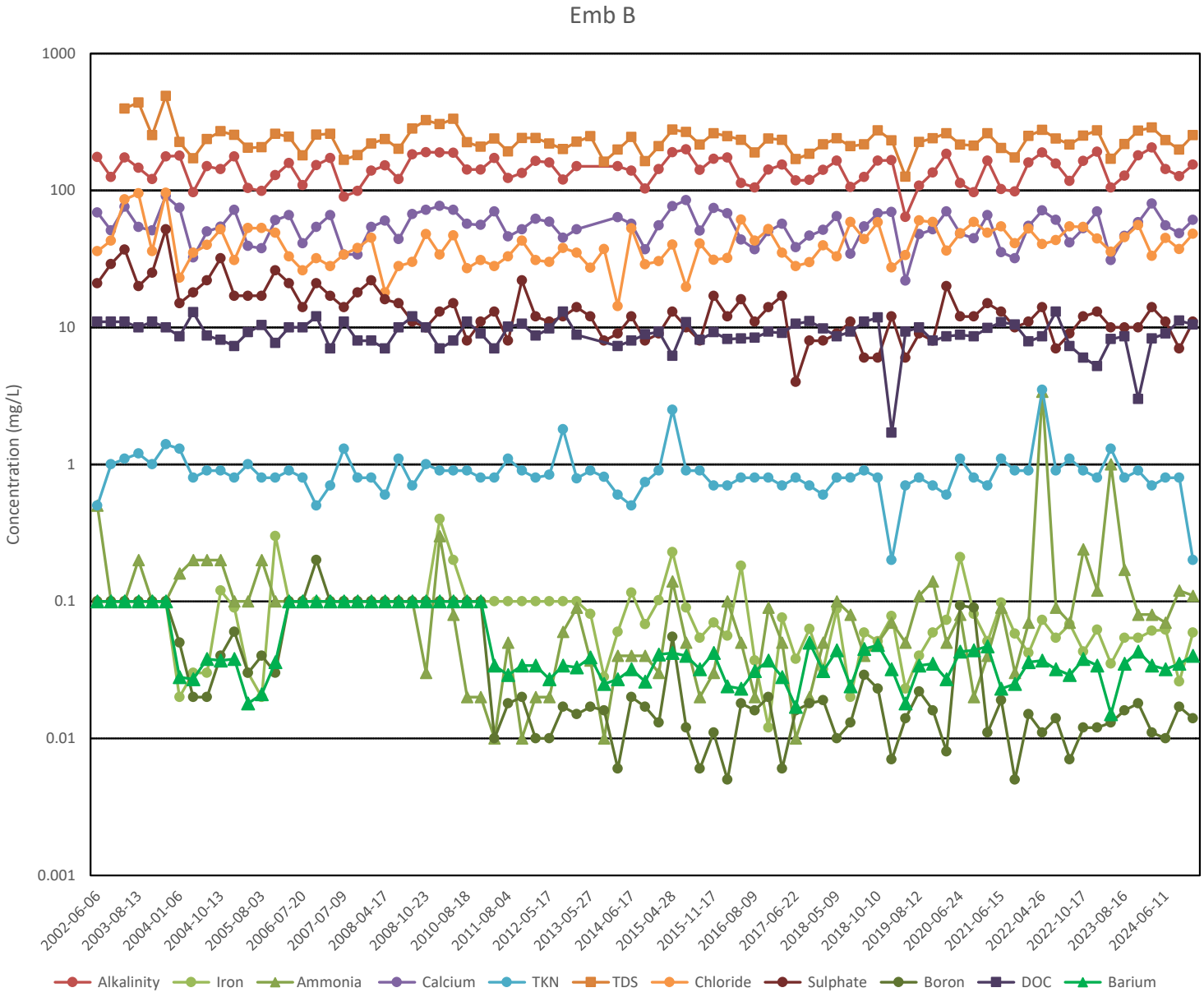

SW14
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
2002-04-10
2003-05-13
2004-07-16
2006-03-13
2006-10-27
2008-04-14
2008-10-21
2010-03-30
2011-05-02
2011-10-26
2012-05-08
2012-06-12
2012-11-13
2013-05-27
2014-04-09
2014-10-14
2015-06-11
2016-04-21
2017-04-24
2017-08-24
2018-06-28
2019-04-24
2019-10-16
2021-04-20
2022-06-07
2023-05-01
2023-08-15
2024-03-27
2024-05-01
2024-08-15
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium

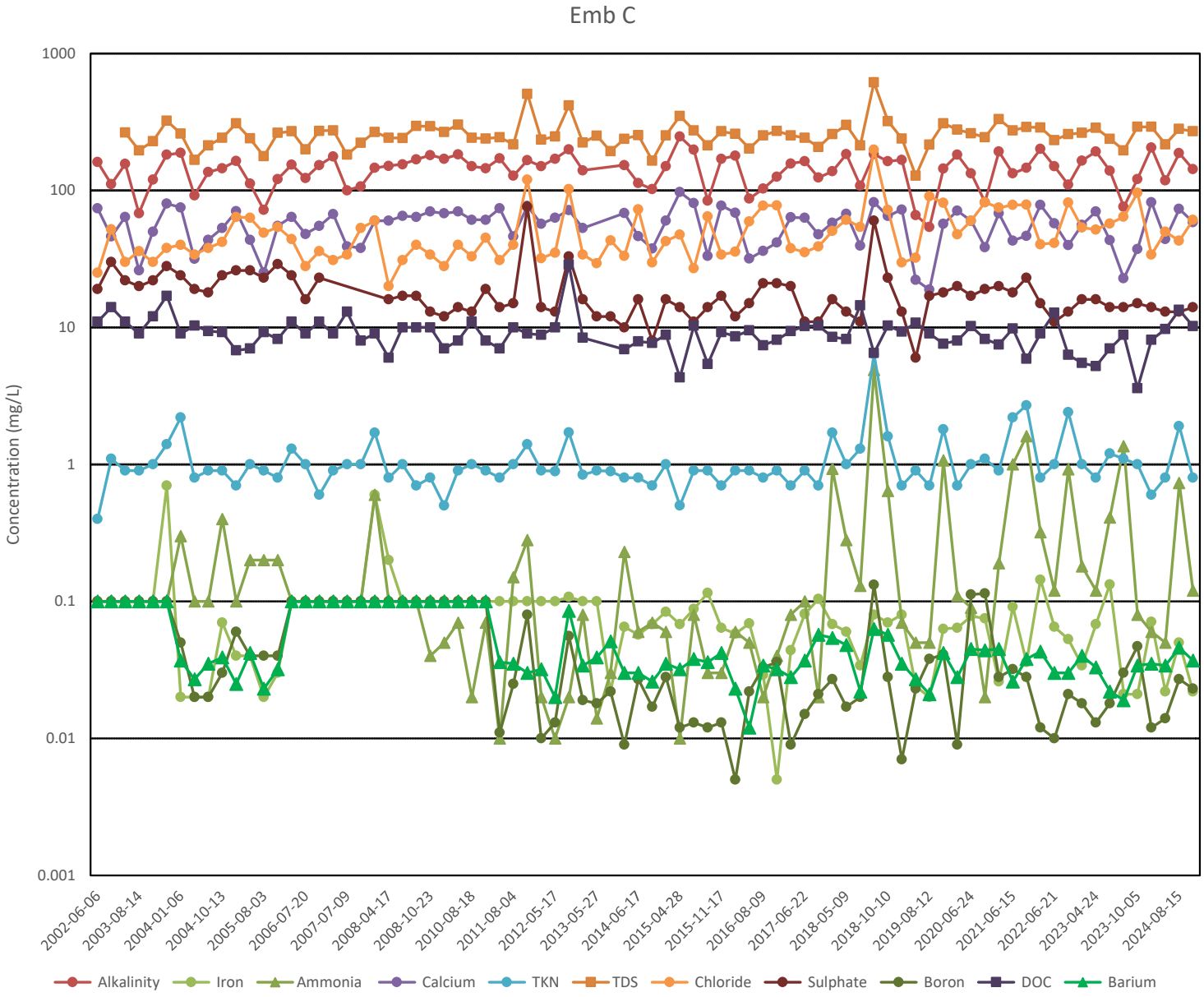

SW15
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
0.001
2001-08-25
2004-07-05
2005-03-31
2005-08-11
2005-10-24
2006-06-01
2006-10-18
2007-03-22
2007-05-28
2007-09-26
2008-04-01
2008-06-09
2010-01-25
2010-05-03
2010-11-17
2011-07-18
2011-09-28
2011-11-15
2012-04-25
2012-07-26
2012-10-22
2012-12-03
2013-10-21
2014-06-17
2014-10-14
2015-06-08
2017-04-24
2017-08-24
2018-06-28
2019-04-24
2020-04-30
2021-04-20
2022-04-26
2023-05-01
2024-03-27
2024-05-01
2024-08-15
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium

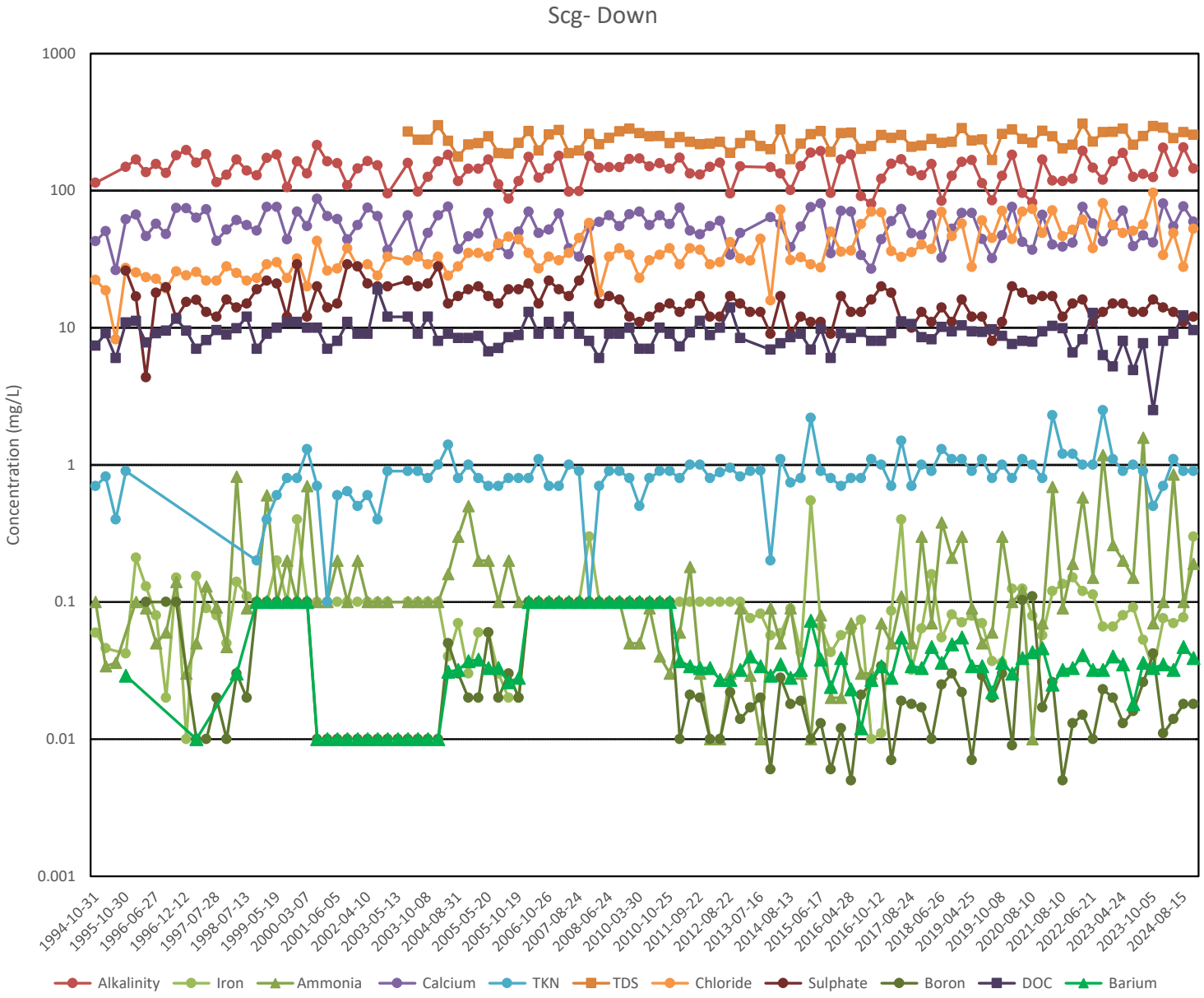

SW16
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
0.001
2004-07-07
2007-04-10
2008-06-19
2010-05-03
2011-08-03
2013-10-21
2016-10-11
2017-08-24
2018-06-28
2019-04-24
2021-04-20
2023-04-24
2023-10-05
2024-08-15
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium

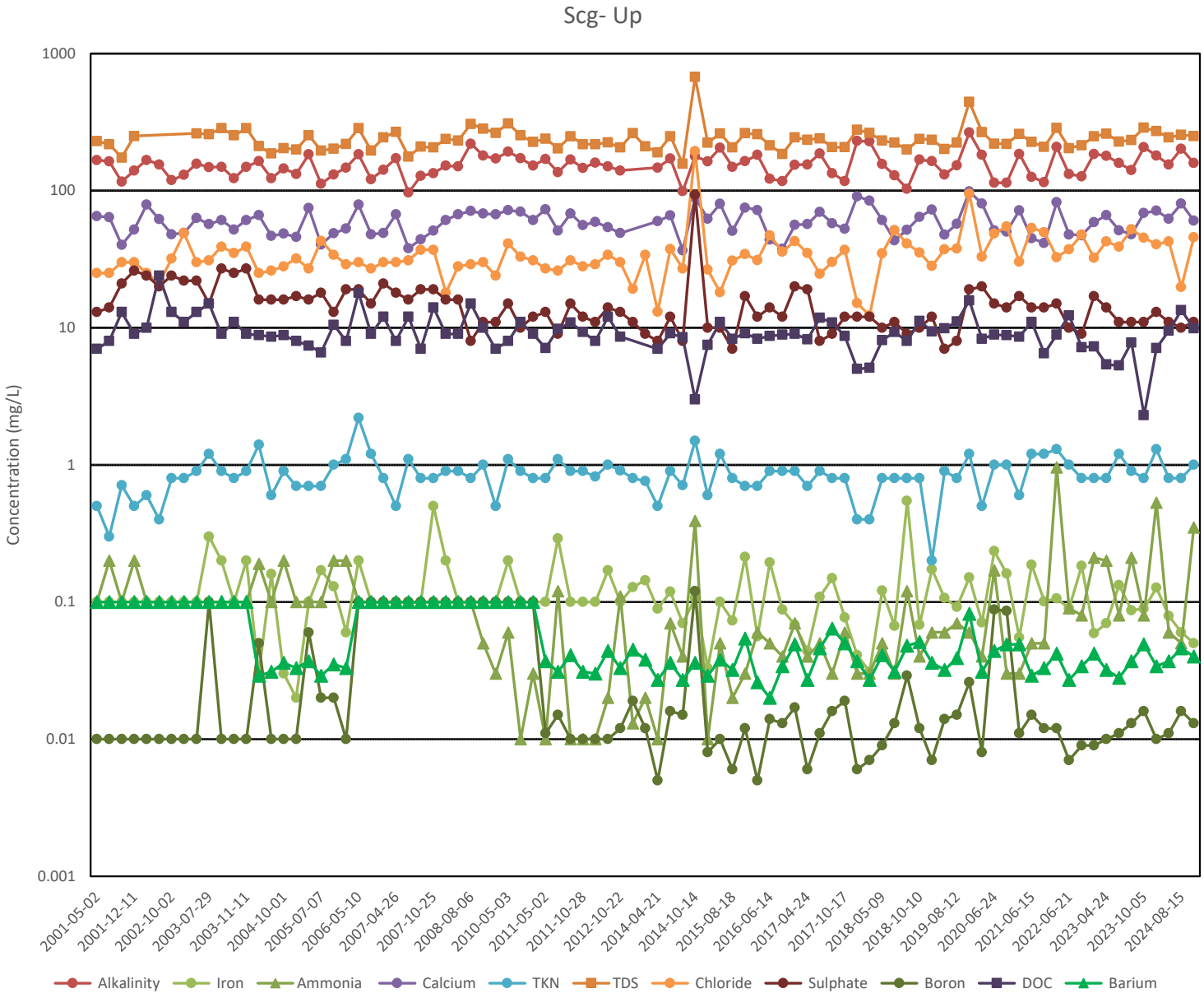

SW18
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
2015-04-20
2015-06-11
2016-04-21
2017-04-24
2017-08-24
2018-06-28
2019-04-24
2019-10-08
2021-04-20
2021-10-15
2022-06-21
2023-04-24
2023-06-26
2023-10-05
2024-04-25
2024-07-29
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium


Emb A
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
2002-06-06
2003-08-14
2004-01-06
2004-10-13
2005-08-03
2006-07-20
2007-07-09
2008-04-17
2008-10-23
2010-08-18
2011-08-04
2012-05-17
2013-05-27
2014-06-17
2015-04-28
2015-11-17
2016-08-09
2017-06-22
2018-05-09
2018-10-10
2019-08-12
2020-06-24
2021-06-15
2022-06-21
2023-04-24
2023-10-05
2024-08-15
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium


Emb B
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
2002-06-06
2003-08-13
2004-01-06
2004-10-13
2005-08-03
2006-07-20
2007-07-09
2008-04-17
2008-10-23
2010-08-18
2011-08-04
2012-05-17
2013-05-27
2014-06-17
2015-04-28
2015-11-17
2016-08-09
2017-06-22
2018-05-09
2018-10-10
2019-08-12
2020-06-24
2021-06-15
2022-04-26
2022-10-17
2023-08-16
2024-06-11
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium


Emb C
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
2002-06-06
2003-08-14
2004-01-06
2004-10-13
2005-08-03
2006-07-20
2007-07-09
2008-04-17
2008-10-23
2010-08-18
2011-08-04
2012-05-17
2013-05-27
2014-06-17
2015-04-28
2015-11-17
2016-08-09
2017-06-22
2018-05-09
2018-10-10
2019-08-12
2020-06-24
2021-06-15
2022-06-21
2023-04-24
2023-10-05
2024-08-15
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium


Scg- Down
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
1994-10-31
1995-10-30
1996-06-27
1996-12-12
1997-07-28
1998-07-13
1999-05-19
2000-03-07
2001-06-05
2002-04-10
2003-05-13
2003-10-08
2004-08-31
2005-05-20
2005-10-19
2006-10-26
2007-08-24
2008-06-24
2010-03-30
2010-10-25
2011-09-22
2012-08-22
2013-07-16
2014-08-13
2015-06-17
2016-04-28
2016-10-12
2017-08-24
2018-06-26
2019-04-25
2019-10-08
2020-08-10
2021-08-10
2022-06-21
2023-04-24
2023-10-05
2024-08-15
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium


Scg- Up
Concentration (mg/L)
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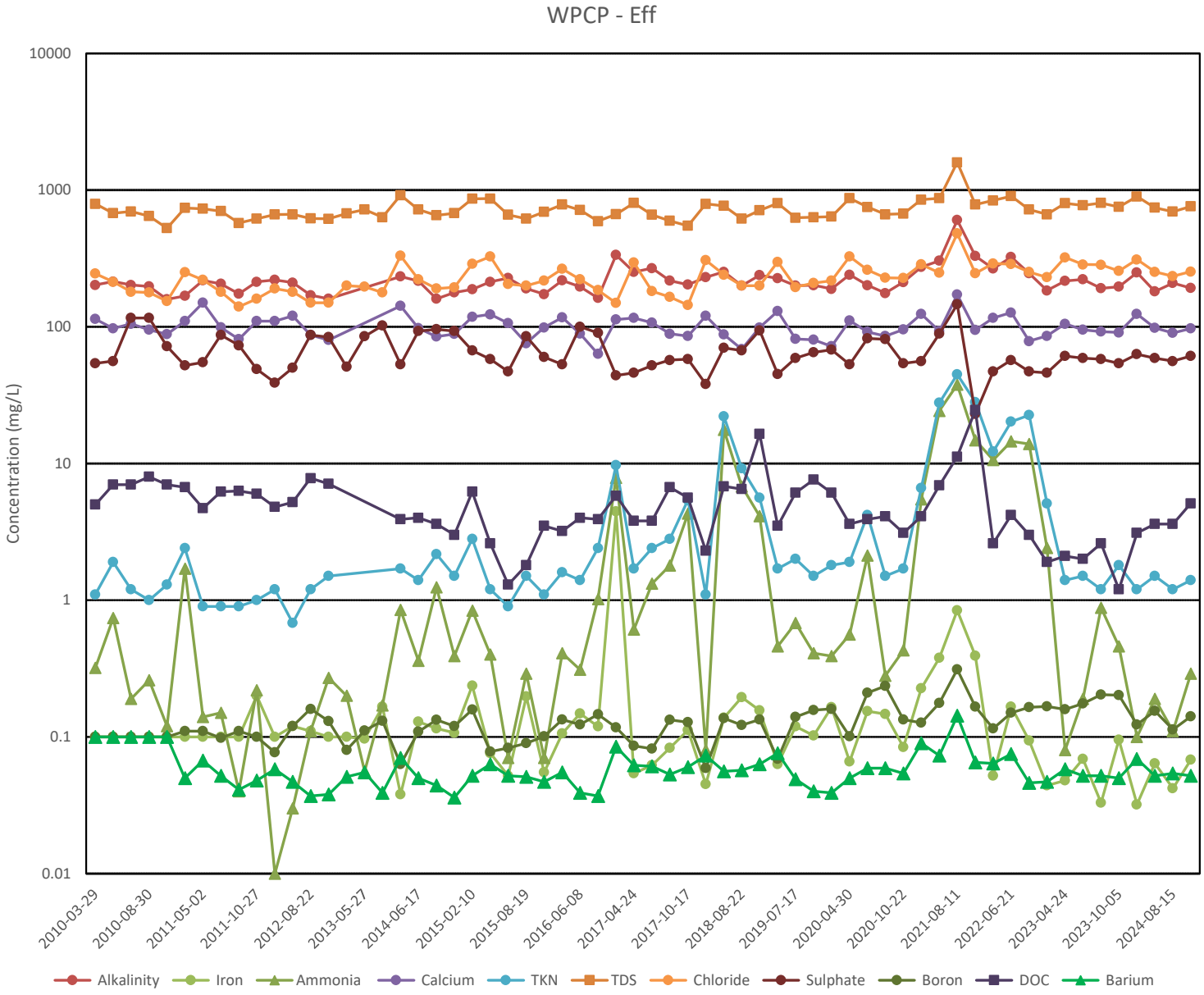
100
10
1
0.1
0.01
0.001
2001-05-02
2001-12-11
2002-10-02
2003-07-29
2003-11-11
2004-10-01
2005-07-07
2006-05-10
2007-04-26
2007-10-25
2008-08-06
2010-05-03
2011-05-02
2011-10-28
2012-10-22
2014-04-21
2014-10-14
2015-08-18
2016-06-14
2017-04-24
2017-10-17
2018-05-09
2018-10-10
2019-08-12
2020-06-24
2021-06-15
2022-06-21
2023-04-24
2023-10-05
2024-08-15
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium


WPCP - Eff
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
2010-03-29
2010-08-30
2011-05-02
2011-10-27
2012-08-22
2013-05-27
2014-06-17
2015-02-10
2015-08-19
2016-06-08
2017-04-24
2017-10-17
2018-08-22
2019-07-17
2020-04-30
2020-10-22
2021-08-11
2022-06-21
2023-04-24
2023-10-05
2024-08-15
Alkalinity
Iron
Ammonia
Calcium
TKN
TDS
Chloride
Sulphate
Boron
DOC
Barium

APPENDIX G

Old Landfill Perimeter Ground Water Quality Interpretation Tables

Table G1: Interpretation of 2024 Ground Water Quality Data – Overburden Monitoring Wells – West Perimeter of Old Landfill

Monitoring Well (Screen Interval)	Indicator Parameters Exceeding Background and/or Showing Increasing Trend	Trend(s)	Ground Water Quality Interpretation
15-91-I (9.2 – 10.7* mbgs)	Chloride / Iron / Sulphate	• upward trend in chloride from ~15 mg/L (2004) to 89 mg/L (2010) which flatten to 2013 and then declines ~25 mg/L since 2019 • sulphate increasing since 2019, but still within historical range • iron concentration routinely >1 mg/L since 2006	• downgradient of the landfill • evidence of leachate impact
	Total Ammonia	• upward trend in total ammonia from <0.1 mg/L (2011) to variable~1-10 mg/L (2018-2024) •	
	Toluene	• since (2008) occasional detections, most recent 0.9 µg/L (May, 2021)	
	Phenols / DOC	• more numerous phenols detection since 2011 • DOC trending from 6 mg/L (2007) to 17 mg/L (2014), below 10 mg/L since 2019	
15-91-II (3.8 – 5.3 mbgs)	Chloride / Iron / Sulphate	• upward trend in chloride from ~40 mg/L (1994) to ~130 mg/L (2006) and then decline to ~70 mg/L (2014) and then drop to <10 mg/L by 2016. Stable at ~4mg/L since then • iron rose above 0.1 mg/L in 1997 to >100 mg/L up to 2007 and then declined to ~50 mg/L since then • sulphate declined from ~150 mg/L (1995) to ~1-3 mg/L (2018-2024)	• downgradient of the landfill • evidence of leachate impact
	Total Ammonia	• upward trend from <0.01 mg/L (1998) to ~9 mg/L (2006) and then decline to ~0.6 mg/L with exception of May 2023 value (2.71 mg/L)	
	DOC	• at 30 mg/L when monitoring started in 2006 and fluctuated higher and lower through to 2014 and then declined to ~10 mg/L from that point onward	
16-91-I (6.2 – 7.7* mbgs)	Chloride / Iron / Sulphate / Boron	• upward trend in chloride from ~20 mg/L (2000) to ~400 mg/L (2010) and between 300-500 mg/L since • iron rose above 0.1 mg/L in 1997 to ~10 mg/L by 2013 and fluctuates seasonally • sulphate declined from ~110 mg/L (1999) to 10 mg/L (2015) and then ranges between 1 & 10 mg/L • boron measured at ~0.2-0.3 mg/L over past six years	• downgradient of the landfill • evidence of leachate impact

Table G1: Interpretation of 2024 Ground Water Quality Data – Overburden Monitoring Wells – West Perimeter of Old Landfill

Monitoring Well (Screen Interval)	Indicator Parameters Exceeding Background and/or Showing Increasing Trend	Trend(s)	Ground Water Quality Interpretation
	Toluene	• consistent BTEX detections from 2006 to 2012, only one in 2022 since	• downgradient of the landfill • evidence of leachate impact
	Total Ammonia	• upward trend from <0.1 mg/L (1997) to ~1 mg/L (2011) and then decline to 0.6 mg/L (2013) with recent years indicating ~0.5-3 mg/L	
	Phenols / DOC	• numerous phenols detection for period of record • DOC at ~30 mg/L in 2006 (start) to 2012 then declines to ~10-15 mg/L	
16-91-II (3.0 – 4.5 mbgs)	Chloride / Iron / Sulphate / Boron	• upward trend in chloride from ~25 mg/L (1991) to ~500 mg/L (2008) and then fluctuated between ~50 mg/L and ~400 mg/L since that time • iron rose above 0.1 mg/L in 1992 to ~20 mg/L in 1996 and fluctuates between 50mg/L and 10 mg/L since that time • sulphate declined from ~100 mg/L (1995) to between 1 mg/L and 10 mg/L (2008) and has remained within this range since • boron measured at ~2 mg/L to 2010 then drops to 0.5 mg/L since then	• downgradient of the landfill • evidence of leachate impact
	Toluene	• inconsistent BTEX detections from 2016 to 2023	
	Total Ammonia	• upward trend from 0.2 mg/L (1995) to ~30 mg/L (2007) and then declines to ~3 mg/L since 2019	
	Phenols / DOC	• numerous phenols detections for period of record • DOC at ~40 mg/L in 2006 (start) to 2010 then declines to ~10-15 mg/L and flattens	
17-91-I (8.2 – 9.7* mbgs)	Chloride / Iron / Sulphate	• Long term chloride trending within a range of 3 & 70 mg/L • iron has been above 0.1 mg/L in 1991 (start) and rose above ~1 mg/L in 2002 and flattened since then, although seasonal fluctuations exist more recently • sulphate declined from ~100 mg/L (1991) to ~20 mg/L by 2002 and then has increased to ~80 mg/L in 2019 and subtle decline since with 2023 / 2024 concentrations ~40 mg/L	• downgradient of the landfill • evidence of slight leachate impact

Table G1: Interpretation of 2024 Ground Water Quality Data – Overburden Monitoring Wells – West Perimeter of Old Landfill

Monitoring Well (Screen Interval)	Indicator Parameters Exceeding Background and/or Showing Increasing Trend	Trend(s)	Ground Water Quality Interpretation
	Total Ammonia	• historical results at or below 0.1 mg/L, isolated elevations up to ~1 mg/L since 2022	
17-91-II (5.1 – 6.6 mbgs)	Chloride / Iron / Sulphate	• downward trend in chloride from ~70 mg/L (1994) to 5 mg/L (2019), more variable since 2019 • sulphate trends down from 50 mg/L to ~20 mg/L (2007) and then climbs abruptly to ~75 mg/L (2008) and then slowly declined to ~30 mg/L • iron rose above 1 mg/L; but has declined since 2007 and has remained low but variable since	• downgradient of the landfill • little evidence of leachate impact
	Total Ammonia	• variable over time but concentrations within a range of 0.01 to ~1 mg/L	
19-91 (4.5 – 6.1 mbgs)	Chloride / Sulphate	• downward trend in chloride from ~40 mg/L (2000) to 5 mg/L (2017) and has risen steadily since up to ~50 mg/L in 2023 • sulphate has longer term trends ranging between 40 and 70 mg/L for more than 20 years	• downgradient of the landfill • little evidence of leachate impact
	Total Ammonia	• historical results at or below 0.1 mg/L, increased concentrations since 2022 ranging between 0.1 and ~1 mg/L	
	Toluene	• inconsistent BTEX detections from 2011 to 2024, with last in 2023	

Notes: * - bottom hole depth at bedrock contact

Table G2: Interpretation of 2024 Ground Water Quality Data – Overburden Monitoring Wells – North Perimeter of Old Landfill

Monitoring Well (Screen Interval)	Indicator Parameters Exceeding Background and/or Showing Increasing Trend	Trend(s)	Ground Water Quality Interpretation
32-93-I (5.4 – 6.9* mbgs)	Chloride	• slight upward trend in chloride from ~50 mg/L (1994) to ~100 mg/L for past six years	• upgradient of the landfill • no significant leachate impact
32-93-II (2.1 – 3.7 mbgs)	Toluene	• consistently below MDL except for trace detections between 2008 and 2021	
43-93-I (6.8 – 8.3 mbgs)	Chloride / Iron / Sulphate	• very subtle increasing chloride trend from 2018 to 2024 from historical range of 50 mg/L to 90 mg/L in 2024 • sulphate concentrations consistent over time at ~50 mg/L • very subtle increasing iron trend from 2018 to 2024 from historical range of 0.2 mg/L to 0.5 mg/L in 2024	• trans to downgradient of the landfill • little evidence of leachate impact
	Total Ammonia / TKN	• Both parameters have a historical range of ~0.01 to 1 mg/L, but relatively consistent over time	
43-93-II (2.3 – 3.8 mbgs)	Chloride / Iron / Sulphate	• chloride concentrations increased from 10 mg/L to ~100 mg/L in 2012, while have remained below this peak since with 2024 concentrations <40 mg/L • sulphate concentrations show long trends within the historical range, with current concentrations <60 mg/L • historically low iron concentrations<0.1 mg/L, although occasional elevations are observed (0.5-6 mg/L)	• trans to downgradient of the landfill • little evidence of leachate impact
	Total Ammonia / TKN	• ammonia concentrations increased from historical range of <0.1 mg/L to 0.1 - ~1 mg/L in 2022	

Notes: * - bottom hole depth at bedrock contact

Table G3: Interpretation of 2024 Ground Water Quality Data – Overburden Monitoring Wells – East Perimeter of Old Landfill

Monitoring Well (Screen Interval)	Indicator Parameters Exceeding Background and/or Showing Increasing Trend	Trend(s)	Ground Water Quality Interpretation
12-91-I (2.8 – 4.2* mbgs)	Total Ammonia / TKN	• ammonia consistent measurement at ~0.1 mg/L until 2022, where concentrations approaching ~1mg/L • TKN remained variable but within predictable range over past 15 years • both indicated isolated increased variability the past two years but generally still within historical range	• immediately upgradient of the landfill • some variably in the major ion chemistry; but no obvious trends, barring TKN • no significant leachate impact
12-91-II (2.2 – 3.7 mbgs)	Chloride	• longer term variance, but within a predictable range	• immediately upgradient of the landfill • some variably in the major ion chemistry; but no obvious trends • iron fluctuates seasonal • no significant leachate impact
	Total Ammonia	• longer term variance, but within a predictable range	
	Phenolics / DOC	• consistently below MDL; but a few detections reported since 2017 DOC consistent at ~10 mg/L	
49-96-II (9.0 – 10.8* mbgs)	Chloride / Iron / Boron	• chloride consistent at ~100 mg/L • boron has slow decline in concentrations over time, concentrations now below 1mg/L since 2021 • iron concentrations show seasonal fluctuations	• upgradient of the landfill • no significant leachate impact
49-96-III (3.6 – 4.6 mbgs)	Chloride / Sulphate	• slight chloride upward trend in 2008 from 40 mg/L to 130 mg/L in 2011 and then flattens, current concentrations ~100 mg/L • sulphate has a downward trend after 2007, but more stable past nine years	• upgradient of the landfill • no significant leachate impact
	Toluene	• consistently below MDL except for sporadic detections, none in past 11 years	

Table G4: Interpretation of 2024 Ground Water Quality Data – Overburden Monitoring Wells – South Perimeter of Old Landfill

Monitoring Well (Screen Interval)	Indicator Parameters Exceeding Background and/or Showing Increasing Trend	Trend(s)	Ground Water Quality Interpretation
13-91-I 10.5 – 12.0* mbgs)	Chloride / Iron / Sulphate	• slight upward trend from 26 mg/L (1991) to 100 mg/L in 2022 and steady since • slight downward trend in sulphate from 32 mg/L (1993) to 18 mg/L (2024) • iron concentration is constant between 0.1 mg/L and ~0.5 mg/L	• parallel gradient of the landfill • no significant leachate impact
	Total Ammonia	• constant at ~0.5 mg/L, although more elevated in 2023 and 2024 (>1 mg/L)	
13-91-II (3.0 – 4.5 mbgs)	Chloride / Sulphate / Iron	• chloride increase from ~60 mg/L to 155 mg/L in 1996 then slight upward trend to ~250 mg/L (2017) then upward trend to 790 mg/L (2019), more variable past three years • upward trend in sulphate from 33 mg/L (1994) to 55 mg/L (2004) then downward trend to ~10 mg/L (2018), although variable last four years • variable iron concentrations, although within predictable range past 15 years	• parallel gradient of the landfill • evidence of leachate impact • seasonally lower influence during May monitoring events the past four years
	Total Ammonia	• variable over time between ~0.1 – 1 mg/L	
14-07 (2.0 – 5.0 mbgs)	Chloride / Iron	• Low concentrations with seasonal variance for both iron and chloride	• shows no significant leachate impact •
	Total ammonia	• Concentrations the pat four years show increasing trend to ~1 mg/L from historical concentration of 0.1 mg/L	
18-91 (4.5 – 6.0 mbgs)	Chloride / Iron / Sulphate	• chloride declined from 2009 (23 mg/L) to 2013 (7 mg/L) but has risen to ~70 mg/L by 2022 and declined again with 2024 concentration being 34 mg/L • slight downward trend in sulphate from ~50 mg/L (1995) to ~15-20 mg/L (2021 - 2024) • iron concentration consistent at ~0.3 mg/L from 1996 to 2011 and then decreases to ~0.1 mg/L, although variable since within a predictable range	• parallel gradient to the landfill • no significant leachate impact

Table G4: Interpretation of 2024 Ground Water Quality Data – Overburden Monitoring Wells – South Perimeter of Old Landfill

Monitoring Well (Screen Interval)	Indicator Parameters Exceeding Background and/or Showing Increasing Trend	Trend(s)	Ground Water Quality Interpretation
23-07 (5.5 – 8.4 mbgs)	Chloride / Iron	• chloride constant at 10 mg/L until 2019 when slow increase began to 40 mg/ in 2022, with reduced concentrations since with 15 mg/L in 2024 • iron concentration elevated variable over time but within a predictable range	• monitoring well replaced to construct landfill cap • new well shows no significant leachate impact • detecting anoxic plume
	Total Ammonia	• concentrations below 0.1 mg/L until 2022, where concentrations became more elevated and variable up to ~1 mg/L	
25-91 (2.4 – 3.9 mbgs)	Chloride / Sulphate / Iron	• elevated from outset ~150 mg/L and staying this level until 2022 when increased to ~250 mg/L, but been back to historical range since • sulphate declines from ~110 mg/L to ~10-50 mg/L since 2006 • iron fluctuates between ~0.1 mg/L and 1 mg/L, but below 0.2 mg/L since	• parallel gradient of the landfill • slight leachate impact
	Total ammonia	• increased from 0.02 (1993) to 0.5 (2004) and then has declined to between 0.01 mg/L and 0.1 mg/L. 2023 concentrations more elevated (~0.5 - 1 mg/L) since 2023	
	DOC	• elevated at ~5 mg/L since start (2006), but been below 4 mg/L since 2014	
29-93 (2.8 – 4.3 mbgs)	Chloride / Iron	• elevated chloride from outset ~1,000 mg/L , but consistently below 400 mg/L since 2008. • iron concentration exists between 0.1 mg/L and ~3 mg/L	• parallel gradient of the landfill • evidence of leachate impact
	DOC	• elevated at ~10 mg/L since start (2006); but has been below 4 mg/L since 2015	
	Total Ammonia	• concentrations below 0.1 mg/L until 2022, where concentrations increased up to ~1 mg/L but are variable	

Table G4: Interpretation of 2024 Ground Water Quality Data – Overburden Monitoring Wells – South Perimeter of Old Landfill

Monitoring Well (Screen Interval)	Indicator Parameters Exceeding Background and/or Showing Increasing Trend	Trend(s)	Ground Water Quality Interpretation
35-93-I (6.7 – 8.2* mbgs)	Chloride	• Chloride has been consistent ~20 mg/L for past 20 years	• parallel gradient of the landfill • no significant leachate impact
	Total Ammonia	• concentrations variable over time but within a predictable range	
35-93-II (2.5 – 4.0 mbgs)	Chloride / Iron	• upward trend for chloride from ~2 mg/L (1999) to 120 mg/L (2005) and then variable between ~10 – 150 mg/L until 2018 where an increasing trend has begun up to ~240 mg/L in 2022 but remaining below this value since • upward trend to iron ~0.08 mg/L (1996) to peaks at ~2 mg/L (2007) and then declining to between ~0.01 – 0.1 mg/L since	• parallel gradient of the landfill • no significant leachate impact
	Total Ammonia	• concentrations below 0.1 mg/L until 2022, where concentrations increased up to ~1 mg/L	
36-93 (2.9 – 4.0 mbgs)	Chloride / Iron	• slight upward chloride trend from ~20 mg/L (1994) to 40 mg/L (2022 - 2024) • iron concentration consistently at ~1 mg/L	• parallel gradient of the landfill • no significant leachate impact • detecting anoxic plume
	Total Ammonia	• concentrations below 0.1 mg/L until 2022, where concentrations increased up to ~1 mg/L	
	Toluene	• inconsistent BTEX detections from 20111 to 2023	
37-93-I (6.7 – 8.2* mbgs)	Chloride / Iron	• upward chloride trend from ~50 mg/L (1995) to ~200 mg/L (2022-2024) • iron concentration between 0.4 mg/L and 1 mg/L, more consistent at 1 mg/L past ten years	• parallel gradient of the landfill • no significant leachate impact • detecting anoxic plume
	Total Ammonia	• concentrations below ~0.3 mg/L until 2022, where concentrations increased up to ~1 mg/L	

Monitoring Well (Screen Interval)	Indicator Parameters Exceeding Background and/or Showing Increasing Trend	Trend(s)	Ground Water Quality Interpretation
37-93-II (2.3 – 3.8 mbgs)	Chloride / Iron	• chloride relatively consistent range past 15 years at 150 – 300 mg/L), within isolated elevation in 2022 up to ~500 mg/L • iron concentrations generally between 0.7 and 2.5 mg/L past 15 years	• parallel gradient of the landfill • no significant leachate impact • brief detection of anoxic plume
	Total Ammonia	• concentrations below 0.1 mg/L until 2022 / 2023, where concentrations increased up to ~1 mg/L but were within historical range in 2024	
	Toluene	• inconsistent BTEX detections from 20111 to 2023	
38-93 (2.5 – 4.0 mbgs)	Chloride / Iron	• chloride relatively consistent range past 10 years at 10 mg/L • iron concentrations generally between 0.01 and 1 mg/L past 25 years	• parallel gradient of the landfill • no significant leachate impact • parameters values consistent over period of record with minor exceptions
	Total Ammonia	• concentrations below 0.1 mg/L until 2022, where concentrations increased up to ~10 mg/L in 2023, but are noted to be lower in 2024 (~0.7mg/L)	
39-93-I (8.9 – 10.4* mbgs)	Chloride / Iron	• slight upward chloride trend from 50 mg/L (1994) to ~175 mg/L (2022) within slight increasing trend past seven years • iron concentration elevated at ~1 mg/L, but consistent	• parallel gradient of the landfill • no significant leachate impact
	Total ammonia	• consistent concentration at ~0.2 mg/L until 2022 with 2023 and 2024 concentrations up to 0.5 - 1 mg/L	
39-93-II (2.3 – 3.8 mbgs)	Chloride / Sulphate	• chloride consistent ~100 mg/L (2006-2014) then upward trend to ~500 mg/L (2019 - 2023) with seasonal variance • sulphate concentration between ~10 and ~60 mg/L since 2006	• parallel gradient of the landfill • slight leachate impact
	Total Ammonia	• essential no detection until (2012) and then consistent trace detection with occasional elevations but <1 mg/L. concentrations more consistently above 0.1 mg/L since 2022 but variable between 0.05 and 1.53 mg/L	

Notes: * - bottom hole depth at bedrock contact

APPENDIX H

Ground Water Quality Summary Tables – PWQO Comparison

Ground Water - General Water Quality PWQO Comparison

Parameters	Units	PWQO	30-93 6-May-24	30-93 16-Oct-24	31-93 6-May-24	31-93 16-Oct-24	45-93 6-May-24	45-93 29-Jul-24	45-93 16-Oct-24	45-95-I 6-May-24	45-95-I 16-Oct-24	45-95-II 6-May-24	45-95-II 16-Oct-24	46-95-I 6-May-24	46-95-I 16-Oct-24	46-95-II 6-May-24	46-95-II 16-Oct-24
Alkalinity	mg/L		450	445	438	433	383	396	377	332	321	279	293	604	592	605	608
Unionized Ammonia	mg/L	0.02					<0.01	0.02	<0.01								
Ammonia	mg/L		6.67	6.89	6.5	8.15	<0.05	0.83	0.14	0.81	1.03	0.07	0.38	26.8	28.3	32	38.9
BOD	mg/L						<3	<3	<3								
Calcium	mg/L		131	130	132	141	113	120	114	134	135	93.3	106	163	174	159	171
COD	mg/L		24	26	37	62	53	14	22	27	15	60	46	37	32	42	34
Chloride	mg/L		178	182	177	187	152	150	187	109	113	26.4	80.5	221	218	221	222
Conductivity	umhos/cm		1420	1390	1410	1400	1220	1220	1340	1200	1140	639	824	1830	1780	1840	1830
Cyanide	mg/L						<0.005	<0.005	<0.005								
DOC	mg/L		5.9	5.4	6	5.7	2.7	1.4	1.1	5.4	5.7	4	5.2	8.6	9.1	8.7	9.7
Fluoride	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hardness	mg/L		470	466	468	501	322	330	316	455	458	260	298	561	590	550	585
Ion Balance	%		1	1.63	1.53	2.49	2.68	3.64	2.81	1.12	2.46	1.74	3.62	1.11	0.124	1.89	1.2
Iron	mg/L	0.3	**8.75**	**3.06**	**10.4**	**10.2**	<0.005	0.016	<0.005	**2.51**	**2.29**	0.006	0.006	**13.9**	**14.1**	**14.4**	**15.6**
Magnesium	mg/L		34.6	34.6	33.5	36	9.45	7.28	7.45	28.9	29.1	6.59	7.82	37.2	38	36.8	38.2
Manganese	mg/L		0.24	0.144	0.361	0.36	<0.001	0.001	<0.001	0.081	0.044	0.003	0.025	0.087	0.093	0.088	0.091
Nitrate	mg/L		<0.05	<0.05	0.21	0.29	0.38	0.41	0.36	<0.05	<0.05	0.94	0.23	<0.05	0.1	<0.05	<0.05
Nitrite	mg/L		<0.05	<0.05	<0.05	0.11	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tot Kjel N	mg/L		7.1	6.6	6.3	9.8	0.9	1	0.3	1.2	1.4	0.7	0.9	29.9	32.2	32.8	39.3
pH-Lab	pH unit	8.5	7.48	7.75	7.49	7.79	7.77	7.9	7.89	7.73	7.91	7.77	7.86	7.41	7.62	7.45	7.67
Phenols	mg/L	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus	mg/L	0.03	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L		3.5	3.5	3.8	4.1	1.3	1.2	1	2.6	2.8	3.1	4.6	9.2	8.8	9.7	9.6
Sodium	mg/L		106	98.9	102	98.7	151	154	141	75.6	70.4	23.3	35.8	131	119	130	120
Sulphate	mg/L		14	15	12	15	18	13	16	126	107	6	3	<1	2	<1	2
TDS	mg/L		775	754	764	759	660	657	724	645	612	332	434	1010	979	1010	1000
TSS	mg/L						3050	323	3150								
Turbidity	NTU						1600	325	1680								
Colour	TCU						<2	<2	<2								
Aluminum	mg/L	0.075	0.06	0.03	0.05	0.04	0.05	0.04	0.06	0.05	0.04	0.03	0.03	0.06	0.05	0.05	0.05
Antimony	mg/L	0.02	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.1	0.0049	0.002	0.0028	0.0039	<0.0001	0.0001	0.0001	0.0003	0.0002	<0.0001	<0.0001	0.0001	0.0001	0.0001	0.0001
Barium	mg/L		0.481	0.374	0.498	0.437	0.07	0.074	0.07	0.049	0.044	0.024	0.027	1.31	1.12	1.32	1.18
Beryllium	mg/L	1.1	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	0.2	0.097	0.093	0.086	0.098	0.011	0.011	0.007	0.117	0.125	0.018	0.031	0.108	0.103	0.106	0.103
Cadmium	mg/L	0.0005	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0009	**0.0028**	**0.0015**	**0.0017**	**0.0015**	0.0002	<0.0001	0.0002	0.0004	0.0003	0.0002	0.0002	0.0008	0.0007	0.0009	0.0008
Copper	mg/L	0.005	0.0002	0.0004	<0.0001	0.0003	0.0005	0.001	0.002	0.0011	0.0004	0.0011	0.003	0.001	0.0003	0.0011	0.0002
Lead	mg/L	0.005	0.00003	<0.00002	<0.00002	0.00003	0.00002	0.00005	<0.00002	0.00009	0.00002	<0.00002	<0.00002	0.00005	<0.00002	0.00004	<0.00002
Mercury	mg/L	0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.04	0.0004	0.0005	0.0003	0.0004	0.0004	0.0002	0.0003	0.0001	0.0001	0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.025	0.0059	0.005	0.0044	0.0043	0.0006	0.0005	0.0004	0.0023	0.0017	0.0004	0.0005	0.0025	0.0023	0.0024	0.0023
Selenium	mg/L	0.1	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium	mg/L		0.555	0.518	0.523	0.525	0.312	0.269	0.265	0.451	0.43	0.25	0.275	0.765	0.728	0.751	0.738
Thallium	mg/L	0.0003	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	0.006	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0004	0.0003	0.0003	0.0003
Zinc	mg/L	0.03	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

PWQO - Provincial Water Quality Objective

Bold & Highlighted - PWQO exceedance

Ground Water - General Water Quality PWQO Comparison

Parameters	Units	PWQO	47-96-I 6-May-24	47-96-I 16-Oct-24	47-96-II 6-May-24	47-96-II 16-Oct-24	48-96-I 6-May-24	48-96-I 16-Oct-24	48-96-II 6-May-24	48-96-II 16-Oct-24	59-05 6-May-24	59-05 16-Oct-24
Alkalinity	mg/L		403	394	404	391	292	285	441	427	598	597
Unionized Ammonia	mg/L	0.02										
Ammonia	mg/L		0.95	1.25	34.3	38.3	0.3	0.71	1.21	0.43	21	21.5
BOD	mg/L											
Calcium	mg/L		122	127	126	104	68	70.8	162	147	165	177
COD	mg/L		23	14	93	91	22	6	74	316	38	34
Chloride	mg/L		148	137	251	229	65	58.5	119	105	210	204
Conductivity	umhos/cm		1250	1170	1620	1560	786	765	1200	1160	1800	1760
Cyanide	mg/L											
DOC	mg/L		5.5	6	4.9	6.5	3	4	6.6	6.6	8.6	9.4
Fluoride	mg/L		<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1
Hardness	mg/L		461	476	405	347	329	336	572	534	568	604
Ion Balance	%		0.787	1.6	1.95	1.85	0.994	3.55	6.53	5.49	0.67	1.04
Iron	mg/L	0.3	**1.71**	**1.73**	**13**	**12.8**	0.034	0.028	**3.82**	**3.61**	**12.9**	**13.6**
Magnesium	mg/L		38.1	38.8	21.5	21.3	38.7	38.8	40.7	40.6	37.9	39.1
Manganese	mg/L		0.076	0.074	0.267	0.229	<0.001	0.005	0.085	0.062	0.078	0.08
Nitrate	mg/L		<0.05	<0.05	<0.05	<0.05	0.16	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tot Kjel N	mg/L		1.2	1.8	38.6	38.2	0.7	1.1	1.3	1.9	21.3	26.2
pH-Lab	pH unit	8.5	7.67	7.83	7.93	7.93	8.01	8.12	7.62	7.9	7.6	7.66
Phenols	mg/L	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus	mg/L	0.03	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L		2.6	2.4	10.8	11.4	3.6	3.5	3.1	3.1	8.4	8.2
Sodium	mg/L		78.6	68.8	154	135	35.2	31.7	52.1	47.5	124	116
Sulphate	mg/L		18	26	2	2	18	15	6	8	<1	1
TDS	mg/L		676	630	886	851	412	400	646	623	986	967
TSS	mg/L											
Turbidity	NTU											
Colour	TCU											
Aluminum	mg/L	0.075	0.04	0.04	**0.18**	0.03	0.04	0.02	**0.11**	0.04	0.05	0.05
Antimony	mg/L	0.02	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.1	<0.0001	<0.0001	0.0009	0.0046	0.0002	0.0002	0.0001	0.0002	<0.0001	<0.0001
Barium	mg/L		0.545	0.452	0.152	0.126	1.22	1.09	0.872	0.789	1.45	1.29
Beryllium	mg/L	1.1	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	0.2	0.087	0.088	0.108	0.11	0.135	0.13	0.072	0.076	0.102	0.101
Cadmium	mg/L	0.0005	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0009	0.0003	0.0002	0.0008	0.0007	0.0001	0.0001	0.0003	0.0002	0.0008	0.0007
Copper	mg/L	0.005	0.0002	0.0003	0.0009	0.0003	0.0005	0.0007	0.0004	0.0007	0.0002	0.0002
Lead	mg/L	0.005	0.00002	<0.00002	<0.00002	<0.00002	0.00008	<0.00002	0.00026	<0.00002	<0.00002	<0.00002
Mercury	mg/L	0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.04	<0.0001	<0.0001	0.0016	0.001	0.0002	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.025	0.0027	0.0022	0.0035	0.002	0.0015	0.0017	0.0025	0.0029	0.0023	0.0021
Selenium	mg/L	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium	mg/L		0.68	0.639	0.445	0.384	1.3	1.25	0.975	0.901	0.777	0.76
Thallium	mg/L	0.0003	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	0.006	<0.0001	<0.0001	<0.0001	0.0001	0.0003	0.0001	0.0003	<0.0001	0.0005	0.0005
Zinc	mg/L	0.03	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

PWQO - Provincial Water Quality Objective

Bold & Highlighted - PWQO exceedance

APPENDIX I

Laboratory Certificates of Analysis

CADUCEON ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-002570 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Jan-26
DATE REPORTED: 2024-Feb-05
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay OPS LPC
P.O. NUMBER:

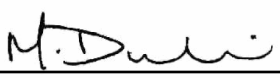
Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	PCURIEL	2024-Jan-29	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	JWOLFE2	2024-Jan-29	BOD-001	SM 5210B
COD (Liquid)	1	KINGSTON	EHINCH	2024-Jan-31	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2024-Jan-29	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
DOC/DIC (Liquid)	1	OTTAWA	VKASYAN	2024-Jan-31	C-OC-01	EPA 415.2
Ion Balance (Calc.)	1	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	1	OTTAWA	STAILLON	2024-Jan-31	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	1	OTTAWA	AOZKAYMAK	2024-Jan-31	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	APRUDYVUS	2024-Jan-30	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2024-Jan-30	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	1	KINGSTON	JYEARWOOD	2024-Feb-01	NH3-001	SM 4500NH3
Phenols (Liquid)	1	KINGSTON	JMACINNES	2024-Jan-31	PHEN-01	MECP E3179
TP & TKN (Liquid)	1	KINGSTON	KDIBBITS	2024-Jan-31	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2024-Jan-31	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received and relate only to the items tested. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

			Client I.D.	LPC
			Sample I.D.	24-002570-1
			Date Collected	2024-01-25
Parameter	**Units**	**R.L.**		-
Alkalinity(CaCO3) to pH4.5	mg/L	5		655
TDS (Calc. from Cond.)	mg/L	3		923
Conductivity @25°C	uS/cm	1		1680
pH @25°C	pH units	-		7.52
Fluoride	mg/L	0.1		<0.1
Chloride	mg/L	0.5		152
Nitrate (N)	mg/L	0.05		<0.05
Nitrite (N)	mg/L	0.05		<0.05
Sulphate	mg/L	1		37
BOD5	mg/L	3		4
Phosphorus (Total)	mg/L	0.01		0.03
Total Kjeldahl Nitrogen	mg/L	0.1		18.7
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		17.9
Dissolved Organic Carbon	mg/L	0.2		17.3
Phenolics	mg/L	0.001		<0.001
COD	mg/L	5		44
Hardness (as CaCO3)	mg/L	-		600
Aluminum (Total)	mg/L	0.01		0.06
Barium (Total)	mg/L	0.001		0.271
Beryllium (Total)	mg/L	0.001		<0.001
Boron (Total)	mg/L	0.005		0.331



Michelle Dubien
Data Specialist

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			Client I.D.	LPC
			Sample I.D.	24-002570-1
			Date Collected	2024-01-25
Parameter	Units	R.L.		-
Cadmium (Total)	mg/L	0.005		<0.005
Calcium (Total)	mg/L	0.02		180
Chromium (Total)	mg/L	0.002		<0.002
Cobalt (Total)	mg/L	0.005		<0.005
Copper (Total)	mg/L	0.002		<0.002
Iron (Total)	mg/L	0.005		11.7
Lead (Total)	mg/L	0.02		<0.02
Magnesium (Total)	mg/L	0.02		29.5
Manganese (Total)	mg/L	0.001		0.474
Molybdenum (Total)	mg/L	0.01		<0.01
Nickel (Total)	mg/L	0.01		<0.01
Phosphorus (Total)	mg/L	0.1		<0.1
Potassium (Total)	mg/L	0.1		16.4
Silver (Total)	mg/L	0.005		<0.005
Sodium (Total)	mg/L	0.2		102
Strontium (Total)	mg/L	0.001		0.652
Tin (Total)	mg/L	0.05		<0.05
Titanium (Total)	mg/L	0.005		<0.005
Vanadium (Total)	mg/L	0.005		<0.005
Zinc (Total)	mg/L	0.005		<0.005
Antimony (Total)	mg/L	0.0005		<0.0005

Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received and relate only to the items tested. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

			Client I.D.	LPC
			Sample I.D.	24-002570-1
			Date Collected	2024-01-25
Parameter	Units	R.L.		-
Arsenic (Total)	mg/L	0.0005		0.0010
Selenium (Total)	mg/L	0.005		<0.005
Thallium (Total)	mg/L	0.0003		<0.0003
Uranium (Total)	mg/L	0.0003		<0.0003
Chromium (VI)	mg/L	0.01		<0.01
Mercury	mg/L	0.00002		0.00002
Anion Sum	meq/L	-		18.1
Cation Sum	meq/L	-		16.9
% Difference	%	-		3.53
Ion Ratio	-	-		1.07
Sodium Adsorption Ratio	-	-		1.86
TDS (Ion Sum Calc)	mg/L	1		921
TDS(calc.)/EC(actual)	-	-		0.547
Conductivity Calc	µmho/cm	-		1510
Conductivity Calc / Conductivity	-	-		0.899
Langelier Index(25°C)	-	-		1.09
Saturation pH (25°C)	-	-		6.43
pH (Client Data)	pH units	-		6.7
Temperature (Client Data)	°C	-		4.5

Michelle Dubien
Data Specialist

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	Client I.D.		LPC
	Sample I.D.		24-002570-1
	Date Collected		2024-01-25
Parameter	**Units**	**R.L.**	-
Benzene	µg/L	0.5	1.9
Ethylbenzene	µg/L	0.5	0.9
Toluene	µg/L	0.5	<0.5
Xylene, m,p-	µg/L	1	1
Xylene, m,p,o-	µg/L	1.1	1.2
Xylene, o-	µg/L	0.5	<0.5

Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received and relate only to the items tested. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

CADUCEON ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: Lindsay OPS **REPORT No: 24-031908 - Rev. 0**

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
285 Dalton Ave
Kingston, ON K7K 6Z1

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Oct-11
DATE REPORTED: 2024-Oct-28
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS SW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	15	OTTAWA	LMACGREGOR	2024-Oct-16	A-IC-01	SM 4110B
BOD5 (Liquid)	15	KINGSTON	JWOLFE2	2024-Oct-18	BOD-001	SM 5210B
COD (Liquid)	15	KINGSTON	DCASSIDY	2024-Oct-18	COD-001	SM 5220D
Colour (Liquid)	15	OTTAWA	STAILLON	2024-Oct-17	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	15	OTTAWA	SBOUDREAU	2024-Oct-17	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	15	KINGSTON	EHINCH	2024-Oct-15	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	15	OTTAWA	SLOZO	2024-Oct-25	C-OC-01	EPA 415.2
Ion Balance (Calc.)	15	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	15	OTTAWA	STAILLON	2024-Oct-18	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	15	OTTAWA	AOZKAYMAK	2024-Oct-17	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	15	OTTAWA	APRUDYVUS	2024-Oct-17	D-ICP-01	SM 3120B
ICP/OES (Liquid)	15	OTTAWA	APRUDYVUS	2024-Oct-18	D-ICP-01	SM 3120B
Mercury (Liquid)	15	OTTAWA	TBENNETT	2024-Oct-18	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	15	KINGSTON	JYEARWOOD	2024-Oct-22	NH3-001	SM 4500NH3
PCB's (Liquid)	1	KINGSTON	CSUMMERHAYS	2024-Oct-18	PCB-001	EPA 8081
Phenols (Liquid)	15	KINGSTON	EHINCH	2024-Oct-22	PHEN-01	MECP E3179
TP & TKN (Liquid)	15	KINGSTON	KDIBBITS	2024-Oct-21	TPTKN-001	MECP E3516.2
TSS (Liquid)	15	KINGSTON	MCLOSS	2024-Oct-16	TSS-001	SM 2540D
Turbidity (Liquid)	15	OTTAWA	PLUSSIER	2024-Oct-17	A-TURB-01	SM 2130B

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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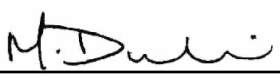
	Client I.D.	SCG-Upstream	SCG-Downstream	Embay A	Embay B	Embay C
	Sample I.D.	24-031908-1	24-031908-2	24-031908-3	24-031908-4	24-031908-5
	Date Collected	2024-10-10	2024-10-10	2024-10-10	2024-10-10	2024-10-10
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	159	145	190	154	143
TDS (Calc. from Cond.)	mg/L	3	237	239	685	236	246
Conductivity @25°C	uS/cm	1	459	462	1270	456	476
pH @25°C	pH units	-	8.17	8.07	8.11	8.03	7.98
Colour	TCU	2	16	14	13	15	15
Turbidity	NTU	0.1	1.8	1.7	0.9	2.9	0.8
Fluoride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	45.6	52.6	242	48.1	60.8
Nitrate (N)	mg/L	0.05	0.09	0.11	6.46	0.07	0.21
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1	11	12	60	11	14
BOD5	mg/L	3	<3	<3	<3	<3	<3
Total Suspended Solids	mg/L	3	3	<3	<3	<3	<3
Phosphorus (Total)	mg/L	0.01	0.02	0.02	0.12	0.01	0.01
Total Kjeldahl Nitrogen	mg/L	0.1	1.0	0.9	1.4	0.2	0.8
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.35	0.19	0.26	0.11	0.12
Ammonia (N)-unionized	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2	9.9	9.6	6.2	10.5	10.2
Cyanide (WAD)	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5	27	30	24	27	26



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	Client I.D.	SCG-Upstream	SCG-Downstream	Embay A	Embay B	Embay C
	Sample I.D.	24-031908-1	24-031908-2	24-031908-3	24-031908-4	24-031908-5
	Date Collected	2024-10-10	2024-10-10	2024-10-10	2024-10-10	2024-10-10
Parameter	**Units** **R.L.**	-	-	-	-	-
Aluminum	mg/L 0.01	<0.01	0.01	0.15	<0.01	0.02
Hardness (as CaCO3)	mg/L 0.02	194	192	308	197	193
Aluminum (Total)	mg/L 0.01	0.03	0.03	0.25	0.03	0.03
Barium (Total)	mg/L 0.001	0.040	0.039	0.033	0.040	0.037
Boron (Total)	mg/L 0.005	0.013	0.018	0.139	0.014	0.023
Calcium (Total)	mg/L 0.02	60.3	59.2	97.8	60.8	58.6
Iron (Total)	mg/L 0.005	0.050	0.300	0.027	0.059	0.022
Magnesium (Total)	mg/L 0.02	10.5	10.8	15.4	10.8	11.2
Manganese (Total)	mg/L 0.001	0.019	0.020	0.012	0.017	0.003
Phosphorus (Total)	mg/L 0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium (Total)	mg/L 0.1	3.2	3.4	18.7	2.8	3.8
Sodium (Total)	mg/L 0.2	23.8	29.3	152	26.3	35.1
Strontium (Total)	mg/L 0.001	0.197	0.199	0.312	0.202	0.204
Tin (Total)	mg/L 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium (Total)	mg/L 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc (Total)	mg/L 0.005	0.008	0.008	0.012	0.007	<0.005
Antimony (Total)	mg/L 0.0001	0.0003	0.0004	0.0006	0.0004	0.0004
Arsenic (Total)	mg/L 0.0001	0.0003	0.0003	0.0002	0.0003	0.0003
Beryllium (Total)	mg/L 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium (Total)	mg/L 0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium (Total)	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001

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Parameter	Units	R.L.	Client I.D.	SCG-Upstream	SCG-Downstream	Embay A	Embay B	Embay C
			Sample I.D.	24-031908-1	24-031908-2	24-031908-3	24-031908-4	24-031908-5
			Date Collected	2024-10-10	2024-10-10	2024-10-10	2024-10-10	2024-10-10
				-	-	-	-	-
Cobalt (Total)	mg/L	0.0001		0.0002	0.0002	0.0003	0.0002	0.0002
Copper (Total)	mg/L	0.0001		0.0003	0.0006	0.0061	0.0004	0.0006
Lead (Total)	mg/L	0.00002		0.00007	0.00013	0.00015	0.00010	0.00003
Molybdenum (Total)	mg/L	0.0001		0.0002	0.0003	0.0031	0.0002	0.0003
Nickel (Total)	mg/L	0.0002		<0.0002	0.0003	0.0011	<0.0002	0.0002
Selenium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium (Total)	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005		0.00043	0.00039	0.00016	0.00040	0.00035
Vanadium (Total)	mg/L	0.0001		0.0004	0.0003	0.0003	0.0004	0.0003
Chromium (VI)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		4.70	4.63	12.3	4.68	4.88
Cation Sum	meq/L	-		5.00	5.22	13.3	5.15	5.48
% Difference	%	-		3.07	6.01	3.61	4.82	5.78
Ion Ratio	-	-		0.940	0.887	0.930	0.908	0.891
Sodium Adsorption Ratio	-	-		0.742	0.918	3.78	0.816	1.10
TDS (Ion Sum Calc)	mg/L	1		250	255	729	253	270
TDS(calc.)/EC(actual)	-	-		0.546	0.552	0.576	0.555	0.568
Conductivity Calc	µmho/cm	-		485	498	1310	492	527
Conductivity Calc / Conductivity	-	-		1.06	1.08	1.04	1.08	1.11



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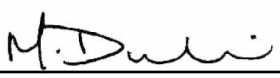
			Client I.D.	SCG-Upstream	SCG-Downstream	Embay A	Embay B	Embay C
			Sample I.D.	24-031908-1	24-031908-2	24-031908-3	24-031908-4	24-031908-5
			Date Collected	2024-10-10	2024-10-10	2024-10-10	2024-10-10	2024-10-10
Parameter	**Units**	**R.L.**		-	-	-	-	-
Langelier Index(25°C)	-	-		0.720	0.570	0.897	0.569	0.460
Saturation pH (25°C)	-	-		7.45	7.50	7.21	7.46	7.52
pH (Client Data)	pH units	-		7.73	7.9	7.57	7.79	7.87
Temperature (Client Data)	°C	-		13.5	12.5	10.5	12.6	10



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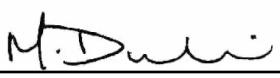
Parameter	Units	R.L.	Client I.D.	SW-2	SW-3	SW-4	SW-14	SW-15
			Sample I.D.	24-031908-6	24-031908-7	24-031908-8	24-031908-9	24-031908-10
			Date Collected	2024-10-10	2024-10-10	2024-10-10	2024-10-10	2024-10-10
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		333	320	406	326	139
TDS (Calc. from Cond.)	mg/L	3		536	479	439	452	327
Conductivity @25°C	uS/cm	1		1000	903	833	856	630
pH @25°C	pH units	-		7.95	8.17	8.19	8.15	7.82
Colour	TCU	2		4	8	16	23	27
Turbidity	NTU	0.1		29.7	7.3	1.3	21.7	19.0
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		117	106	35.1	81.4	100.0
Nitrate (N)	mg/L	0.05		0.08	<0.05	<0.05	<0.05	0.14
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		28	13	10	12	32
BOD5	mg/L	3		<3	<3	<3	<3	<3
Total Suspended Solids	mg/L	3		61	64	<3	42	11
Phosphorus (Total)	mg/L	0.01		0.02	0.04	0.01	0.08	0.04
Total Kjeldahl Nitrogen	mg/L	0.1		0.3	0.6	0.6	1.1	1.5
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.16	0.18	0.21	0.16	0.34
Ammonia (N)-unionized	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		3.6	4.5	7.4	10.6	10.3
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		9	16	15	40	32



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Parameter	Units	R.L.	Client I.D.	SW-2	SW-3	SW-4	SW-14	SW-15
			Sample I.D.	24-031908-6	24-031908-7	24-031908-8	24-031908-9	24-031908-10
			Date Collected	2024-10-10	2024-10-10	2024-10-10	2024-10-10	2024-10-10
				-	-	-	-	-
Aluminum	mg/L	0.01		0.04	0.04	0.04	0.03	0.03
Hardness (as CaCO3)	mg/L	0.02		442	418	438	385	187
Aluminum (Total)	mg/L	0.01		0.08	0.35	0.06	0.37	0.33
Barium (Total)	mg/L	0.001		0.122	0.075	0.051	0.058	0.060
Boron (Total)	mg/L	0.005		0.031	0.023	0.018	0.045	0.082
Calcium (Total)	mg/L	0.02		151	145	156	134	61.6
Iron (Total)	mg/L	0.005		0.456	3.32	0.152	0.756	0.479
Magnesium (Total)	mg/L	0.02		15.6	13.4	11.9	12.1	7.99
Manganese (Total)	mg/L	0.001		0.094	0.702	0.034	0.194	0.019
Phosphorus (Total)	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium (Total)	mg/L	0.1		3.4	3.4	2.4	9.1	8.9
Sodium (Total)	mg/L	0.2		67.0	61.0	23.6	51.9	63.5
Strontium (Total)	mg/L	0.001		0.483	0.392	0.413	0.397	0.326
Tin (Total)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium (Total)	mg/L	0.005		<0.005	0.017	<0.005	0.019	0.013
Zinc (Total)	mg/L	0.005		0.021	0.009	0.005	0.007	0.010
Antimony (Total)	mg/L	0.0001		0.0003	0.0003	0.0002	0.0003	0.0006
Arsenic (Total)	mg/L	0.0001		0.0004	0.0007	0.0003	0.0004	0.0007
Beryllium (Total)	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium (Total)	mg/L	0.000015		<0.000015	0.000015	<0.000015	<0.000015	<0.000015
Chromium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001

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Parameter	Units	R.L.	Client I.D.	SW-2	SW-3	SW-4	SW-14	SW-15
			Sample I.D.	24-031908-6	24-031908-7	24-031908-8	24-031908-9	24-031908-10
			Date Collected	2024-10-10	2024-10-10	2024-10-10	2024-10-10	2024-10-10
				-	-	-	-	-
Cobalt (Total)	mg/L	0.0001		0.0010	0.0007	0.0004	0.0005	0.0004
Copper (Total)	mg/L	0.0001		0.0009	0.0008	0.0005	0.0009	0.0027
Lead (Total)	mg/L	0.00002		0.00014	0.00084	0.00003	0.00028	0.00044
Molybdenum (Total)	mg/L	0.0001		0.0002	<0.0001	0.0001	0.0002	0.0008
Nickel (Total)	mg/L	0.0002		0.0008	0.0008	0.0005	0.0010	0.0015
Selenium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium (Total)	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005		0.00059	0.00029	0.00061	0.00042	0.00068
Vanadium (Total)	mg/L	0.0001		0.0002	0.0009	0.0003	0.0009	0.0006
Chromium (VI)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		10.5	9.65	9.31	9.07	6.26
Cation Sum	meq/L	-		11.9	11.3	9.86	10.2	6.76
% Difference	%	-		5.87	7.84	2.85	6.05	3.81
Ion Ratio	-	-		0.889	0.855	0.945	0.886	0.927
Sodium Adsorption Ratio	-	-		1.39	1.30	0.490	1.15	2.02
TDS (Ion Sum Calc)	mg/L	1		583	538	483	498	358
TDS(calc.)/EC(actual)	-	-		0.580	0.596	0.579	0.581	0.568
Conductivity Calc	µmho/cm	-		1060	990	868	914	676
Conductivity Calc / Conductivity	-	-		1.06	1.10	1.04	1.07	1.07

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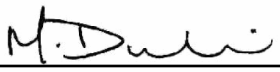
			Client I.D.	SW-2	SW-3	SW-4	SW-14	SW-15
			Sample I.D.	24-031908-6	24-031908-7	24-031908-8	24-031908-9	24-031908-10
			Date Collected	2024-10-10	2024-10-10	2024-10-10	2024-10-10	2024-10-10
Parameter	**Units**	**R.L.**		-	-	-	-	-
Langelier Index(25°C)	-	-		1.18	1.36	1.53	1.33	0.299
Saturation pH (25°C)	-	-		6.77	6.81	6.66	6.82	7.52
pH (Client Data)	pH units	-		7.42	7.68	7.84	8.33	7.24
Temperature (Client Data)	°C	-		13	7.9	10.4	11.4	7.5



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	Client I.D.	SW-18	WPCP Effluent	CP1	CP2	DUP
	Sample I.D.	24-031908-11	24-031908-12	24-031908-13	24-031908-14	24-031908-15
	Date Collected	2024-10-10	2024-10-10	2024-10-10	2024-10-10	2024-10-10
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	202	192	173	403	147
TDS (Calc. from Cond.)	mg/L	3	357	712	329	514	241
Conductivity @25°C	uS/cm	1	687	1320	633	966	467
pH @25°C	pH units	-	7.90	7.87	7.99	8.22	7.95
Colour	TCU	2	20	13	41	19	15
Turbidity	NTU	0.1	0.8	1.9	6.0	2.8	2.2
Fluoride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	92.9	253	83.1	79.2	52.9
Nitrate (N)	mg/L	0.05	<0.05	8.33	<0.05	<0.05	0.12
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1	11	61	14	13	12
BOD5	mg/L	3	<3	<3	<3	<3	<3
Total Suspended Solids	mg/L	3	<3	4	4	28	<3
Phosphorus (Total)	mg/L	0.01	0.02	0.07	0.05	0.03	0.02
Total Kjeldahl Nitrogen	mg/L	0.1	1.1	1.4	1.8	0.9	0.8
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.31	0.29	0.26	0.09	0.18
Ammonia (N)-unionized	mg/L	0.01	0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2	12.3	5.1	25.9	9.4	9.7
Cyanide (WAD)	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5	33	26	61	25	27

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	Client I.D.	SW-18	WPCP Effluent	CP1	CP2	DUP
	Sample I.D.	24-031908-11	24-031908-12	24-031908-13	24-031908-14	24-031908-15
	Date Collected	2024-10-10	2024-10-10	2024-10-10	2024-10-10	2024-10-10
Parameter	**Units** / **R.L.**	-	-	-	-	-
Aluminum	mg/L / 0.01	0.02	0.08	<0.01	0.04	<0.01
Hardness (as CaCO3)	mg/L / 0.02	252	307	157	469	191
Aluminum (Total)	mg/L / 0.01	0.03	1.04	0.09	0.07	0.03
Barium (Total)	mg/L / 0.001	0.045	0.052	0.058	0.059	0.039
Boron (Total)	mg/L / 0.005	0.084	0.141	0.106	0.028	0.017
Calcium (Total)	mg/L / 0.02	85.1	97.1	51.9	166	58.5
Iron (Total)	mg/L / 0.005	0.085	0.068	0.232	0.218	0.047
Magnesium (Total)	mg/L / 0.02	9.42	15.6	6.62	13.4	10.9
Manganese (Total)	mg/L / 0.001	0.022	0.008	0.116	0.125	0.018
Phosphorus (Total)	mg/L / 0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium (Total)	mg/L / 0.1	8.1	22.2	51.4	8.6	3.0
Sodium (Total)	mg/L / 0.2	53.5	159	44.3	52.0	29.4
Strontium (Total)	mg/L / 0.001	0.300	0.319	0.262	0.462	0.200
Tin (Total)	mg/L / 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium (Total)	mg/L / 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc (Total)	mg/L / 0.005	<0.005	0.013	<0.005	<0.005	<0.005
Antimony (Total)	mg/L / 0.0001	0.0002	0.0006	0.0006	0.0003	0.0004
Arsenic (Total)	mg/L / 0.0001	0.0003	0.0002	0.0010	0.0003	0.0003
Beryllium (Total)	mg/L / 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium (Total)	mg/L / 0.000015	<0.000015	0.000017	<0.000015	<0.000015	<0.000015
Chromium (Total)	mg/L / 0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Michelle Dubien
Data Specialist

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			Client I.D.	SW-18	WPCP Effluent	CP1	CP2	DUP
			Sample I.D.	24-031908-11	24-031908-12	24-031908-13	24-031908-14	24-031908-15
			Date Collected	2024-10-10	2024-10-10	2024-10-10	2024-10-10	2024-10-10
Parameter	**Units**	**R.L.**		-	-	-	-	-
Cobalt (Total)	mg/L	0.0001		0.0002	0.0003	0.0003	0.0004	0.0002
Copper (Total)	mg/L	0.0001		0.0005	0.0089	0.0008	0.0008	0.0005
Lead (Total)	mg/L	0.00002		<0.00002	0.00026	0.00012	0.00004	0.00010
Molybdenum (Total)	mg/L	0.0001		0.0003	0.0033	0.0009	0.0002	0.0003
Nickel (Total)	mg/L	0.0002		0.0006	0.0017	0.0017	0.0008	0.0004
Selenium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium (Total)	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005		0.00030	0.00015	0.00020	0.00046	0.00038
Vanadium (Total)	mg/L	0.0001		0.0002	0.0003	0.0004	0.0003	0.0003
Chromium (VI)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		6.89	12.8	6.10	10.5	4.69
Cation Sum	meq/L	-		7.57	13.6	6.40	11.9	5.18
% Difference	%	-		4.67	2.91	2.39	5.95	4.97
Ion Ratio	-	-		0.911	0.943	0.953	0.888	0.905
Sodium Adsorption Ratio	-	-		1.47	3.95	1.54	1.04	0.926
TDS (Ion Sum Calc)	mg/L	1		382	760	356	574	256
TDS(calc.)/EC(actual)	-	-		0.556	0.578	0.562	0.594	0.547
Conductivity Calc	µmho/cm	-		726	1360	658	1040	498
Conductivity Calc / Conductivity	-	-		1.06	1.03	1.04	1.07	1.07

Michelle Dubien
Data Specialist

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		Client I.D.	SW-18	WPCP Effluent	CP1	CP2	DUP
		Sample I.D.	24-031908-11	24-031908-12	24-031908-13	24-031908-14	24-031908-15
		Date Collected	2024-10-10	2024-10-10	2024-10-10	2024-10-10	2024-10-10
Parameter	**Units**	**R.L.**	-	-	-	-	-
Langelier Index(25°C)	-	-	0.683	0.659	0.490	1.57	0.452
Saturation pH (25°C)	-	-	7.22	7.21	7.50	6.65	7.50
pH (Client Data)	pH units	-	8.3	7.96	7.42	7.22	7.9
Temperature (Client Data)	°C	-	10.4	18.5	14.2	11.4	12.5

		Client I.D.	SW-3
		Sample I.D.	24-031908-7
		Date Collected	2024-10-10
Parameter	**Units**	**R.L.**	-
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05	<0.05
Identification Comment	-	-	-

Michelle Dubien
Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: Lindsay OPS - Nearshore **REPORT No: 24-031955 - Rev. 0**

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
285 Dalton Ave
Kingston, ON K7K 6Z1

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Oct-11
DATE REPORTED: 2024-Oct-22
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS SW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Cond/pH/Alk Auto (Liquid)	2	OTTAWA	SBOUDREAU	2024-Oct-17	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
ICP/OES Total (Liquid)	2	OTTAWA	APRUDYVUS	2024-Oct-17	D-ICP-01	SM 3120B
ICP/OES (Liquid)	2	OTTAWA	APRUDYVUS	2024-Oct-18	D-ICP-01	SM 3120B
Ammonia (Liquid)	2	KINGSTON	JYEARWOOD	2024-Oct-22	NH3-001	SM 4500NH3
TSS (Liquid)	2	KINGSTON	MCLOSS	2024-Oct-17	TSS-001	SM 2540D
Turbidity (Liquid)	2	OTTAWA	PLUSSIER	2024-Oct-17	A-TURB-01	SM 2130B

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

			Client I.D.	Nearshore 1	Nearshore 2
			Sample I.D.	24-031955-1	24-031955-2
			Date Collected	2024-10-10	2024-10-10
Parameter	**Units**	**R.L.**		-	-
pH @25°C	pH units	-		7.77	8.03
Turbidity	NTU	0.1		1.4	1.0
Total Suspended Solids	mg/L	3		<3	4
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.10	0.08
Iron	mg/L	0.005		0.006	0.015
Iron (Total)	mg/L	0.005		0.031	0.048
pH (Client Data)	pH units	-		7.78	7.76
Temperature (Client Data)	°C	-		10.5	9.8

Michelle Dubien
Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-003777 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
112 Commerce Park Dr Unit L
Barrie, ON L4N 8W8

Attention: Kayla Pantaleo

DATE RECEIVED: 2024-Feb-08
DATE REPORTED: 2024-Feb-15
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay OPS
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	LMACGREGOR	2024-Feb-12	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	JWOLFE2	2024-Feb-09	BOD-001	SM 5210B
COD (Liquid)	1	KINGSTON	EHINCH	2024-Feb-14	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2024-Feb-09	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
DOC/DIC (Liquid)	1	OTTAWA	VKASYAN	2024-Feb-12	C-OC-01	EPA 415.2
Ion Balance (Calc.)	1	OTTAWA	STAILLON		CP-028	MECP E3196
Chromium VI (Liquid)	1	OTTAWA	STAILLON	2024-Feb-12	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	1	OTTAWA	TPRICE	2024-Feb-12	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	APRUDYVUS	2024-Feb-13	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2024-Feb-12	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	1	KINGSTON	JYEARWOOD	2024-Feb-13	NH3-001	SM 4500NH3
Phenols (Liquid)	1	KINGSTON	JMACINNES	2024-Feb-12	PHEN-01	MECP E3179
TP & TKN (Liquid)	1	KINGSTON	KDIBBITS	2024-Feb-14	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2024-Feb-10	C-VOC-02	EPA 8260

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NC = Not Calculated
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Michelle Dubien
Data Specialist

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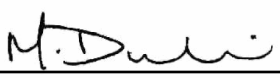
			Client I.D.	LPC
			Sample I.D.	24-003777-1
			Date Collected	2024-02-07
Parameter	**Units**	**R.L.**		-
Alkalinity(CaCO3) to pH4.5	mg/L	5		625
TDS (Calc. from Cond.)	mg/L	3		893
Conductivity @25°C	uS/cm	1		1630
pH @25°C	pH units	-		7.29
Fluoride	mg/L	0.1		<0.1
Chloride	mg/L	0.5		164
Nitrate (N)	mg/L	0.05		0.07
Nitrite (N)	mg/L	0.05		<0.05
Sulphate	mg/L	1		34
BOD5	mg/L	3		8
Phosphorus (Total)	mg/L	0.01		0.33
Total Kjeldahl Nitrogen	mg/L	0.1		21.0
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		17.6
Dissolved Organic Carbon	mg/L	0.2		43.9
Phenolics	mg/L	0.001		<0.001
COD	mg/L	5		191
Hardness (as CaCO3)	mg/L	-		600
Aluminum (Total)	mg/L	0.01		0.22
Barium (Total)	mg/L	0.001		0.604
Beryllium (Total)	mg/L	0.001		<0.001
Boron (Total)	mg/L	0.005		0.359



Michelle Dubien
Data Specialist

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			Client I.D.	LPC
			Sample I.D.	24-003777-1
			Date Collected	2024-02-07
Parameter	Units	R.L.		-
Cadmium (Total)	mg/L	0.005		<0.005
Calcium (Total)	mg/L	0.02		190
Chromium (Total)	mg/L	0.002		0.004
Cobalt (Total)	mg/L	0.005		<0.005
Copper (Total)	mg/L	0.002		<0.002
Iron (Total)	mg/L	0.005		103
Lead (Total)	mg/L	0.02		<0.02
Magnesium (Total)	mg/L	0.02		28.6
Manganese (Total)	mg/L	0.001		0.545
Molybdenum (Total)	mg/L	0.01		<0.01
Nickel (Total)	mg/L	0.01		<0.01
Phosphorus (Total)	mg/L	0.1		0.1
Potassium (Total)	mg/L	0.1		14.9
Silver (Total)	mg/L	0.005		<0.005
Sodium (Total)	mg/L	0.2		98.7
Strontium (Total)	mg/L	0.001		0.689
Tin (Total)	mg/L	0.05		<0.05
Titanium (Total)	mg/L	0.005		0.014
Vanadium (Total)	mg/L	0.005		<0.005
Zinc (Total)	mg/L	0.005		0.010
Antimony (Total)	mg/L	0.0005		<0.0005

Michelle Dubien
Data Specialist

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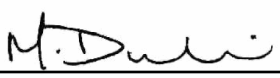
			Client I.D.	LPC
			Sample I.D.	24-003777-1
			Date Collected	2024-02-07
Parameter	Units	R.L.		-
Arsenic (Total)	mg/L	0.0005		0.0064
Selenium (Total)	mg/L	0.005		<0.005
Thallium (Total)	mg/L	0.0003		<0.0003
Uranium (Total)	mg/L	0.0003		0.0003
Chromium (VI)	mg/L	0.01		<0.01
Mercury	mg/L	0.00002		<0.00002
Anion Sum	meq/L	-		17.8
Cation Sum	meq/L	-		19.7
% Difference	%	-		4.98
Ion Ratio	-	-		0.905
Sodium Adsorption Ratio	-	-		1.76
TDS (Ion Sum Calc)	mg/L	1		964
TDS(calc.)/EC(actual)	-	-		0.591
Conductivity Calc	µmho/cm	-		1500
Conductivity Calc / Conductivity	-	-		0.917
Langelier Index(25°C)	-	-		0.862
Saturation pH (25°C)	-	-		6.43
pH (Client Data)	pH units	-		7.81
Temperature (Client Data)	°C	-		12.3



Michelle Dubien
Data Specialist

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			Client I.D.	LPC
			Sample I.D.	24-003777-1
			Date Collected	2024-02-07
Parameter	Units	R.L.		-
Benzene	µg/L	0.5		2.1
Ethylbenzene	µg/L	0.5		0.7
Toluene	µg/L	0.5		<0.5
Xylene, m,p-	µg/L	1		<1
Xylene, m,p,o-	µg/L	1.1		<1.1
Xylene, o-	µg/L	0.5		<0.5

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-007169 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Mar-15
DATE REPORTED: 2024-Mar-25
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay OPS
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	LMACGREGOR	2024-Mar-20	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	JYEARWOOD	2024-Mar-20	BOD-001	SM 5210B
COD (Liquid)	1	KINGSTON	EHINCH	2024-Mar-20	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2024-Mar-19	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
DOC/DIC (Liquid)	1	OTTAWA	VKASYAN	2024-Mar-19	C-OC-01	EPA 415.2
Ion Balance (Calc.)	1	OTTAWA	TPRICE		CP-028	MECP E3196
Chromium VI (Liquid)	1	OTTAWA	STAILLON	2024-Mar-21	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	1	OTTAWA	TPRICE	2024-Mar-20	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	APRUDYVUS	2024-Mar-20	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2024-Mar-20	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	1	KINGSTON	JYEARWOOD	2024-Mar-20	NH3-001	SM 4500NH3
Phenols (Liquid)	1	KINGSTON	EHINCH	2024-Mar-20	PHEN-01	MECP E3179
TP & TKN (Liquid)	1	KINGSTON	KDIBBITS	2024-Mar-20	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2024-Mar-20	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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Data Specialist

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			Client I.D.	LPC
			Sample I.D.	24-007169-1
			Date Collected	2024-03-14
Parameter	**Units**	**R.L.**		-
Alkalinity(CaCO3) to pH4.5	mg/L	5		625
TDS (Calc. from Cond.)	mg/L	3		918
Conductivity @25°C	uS/cm	1		1680
pH @25°C	pH units	-		7.46
Fluoride	mg/L	0.1		<0.1
Chloride	mg/L	0.5		158
Nitrate (N)	mg/L	0.05		0.09
Nitrite (N)	mg/L	0.05		<0.05
Sulphate	mg/L	1		40
BOD5	mg/L	3		5
Phosphorus (Total)	mg/L	0.01		0.04
Total Kjeldahl Nitrogen	mg/L	0.1		18.0
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		16.3
Dissolved Organic Carbon	mg/L	0.2		13.3
Phenolics	mg/L	0.001		<0.001
COD	mg/L	5		45
Hardness (as CaCO3)	mg/L	-		600
Aluminum (Total)	mg/L	0.01		0.08
Barium (Total)	mg/L	0.001		0.280
Beryllium (Total)	mg/L	0.001		<0.001
Boron (Total)	mg/L	0.005		0.353

Michelle Dubien
Data Specialist

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			Client I.D.	LPC
			Sample I.D.	24-007169-1
			Date Collected	2024-03-14
Parameter	Units	R.L.		-
Cadmium (Total)	mg/L	0.005		<0.005
Calcium (Total)	mg/L	0.02		199
Chromium (Total)	mg/L	0.002		0.004
Cobalt (Total)	mg/L	0.005		<0.005
Copper (Total)	mg/L	0.002		<0.002
Iron (Total)	mg/L	0.005		15.1
Lead (Total)	mg/L	0.02		<0.02
Magnesium (Total)	mg/L	0.02		32.7
Manganese (Total)	mg/L	0.001		0.491
Molybdenum (Total)	mg/L	0.01		<0.01
Nickel (Total)	mg/L	0.01		<0.01
Phosphorus (Total)	mg/L	0.1		<0.1
Potassium (Total)	mg/L	0.1		17.1
Silver (Total)	mg/L	0.005		<0.005
Sodium (Total)	mg/L	0.2		119
Strontium (Total)	mg/L	0.001		0.716
Tin (Total)	mg/L	0.05		<0.05
Titanium (Total)	mg/L	0.005		<0.005
Vanadium (Total)	mg/L	0.005		<0.005
Zinc (Total)	mg/L	0.005		0.005
Antimony (Total)	mg/L	0.0005		<0.0005

Michelle Dubien
Data Specialist

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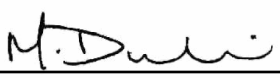
			Client I.D.	LPC
			Sample I.D.	24-007169-1
			Date Collected	2024-03-14
Parameter	Units	R.L.		-
Arsenic (Total)	mg/L	0.0005		0.0010
Selenium (Total)	mg/L	0.005		<0.005
Thallium (Total)	mg/L	0.0003		<0.0003
Uranium (Total)	mg/L	0.0003		<0.0003
Chromium (VI)	mg/L	0.01		<0.01
Mercury	mg/L	0.00002		0.00008
Anion Sum	meq/L	-		17.8
Cation Sum	meq/L	-		20.2
% Difference	%	-		6.40
Ion Ratio	-	-		0.880
Sodium Adsorption Ratio	-	-		2.07
TDS (Ion Sum Calc)	mg/L	1		979
TDS(calc.)/EC(actual)	-	-		0.584
Conductivity Calc	µmho/cm	-		1660
Conductivity Calc / Conductivity	-	-		0.989
Langelier Index(25°C)	-	-		1.05
Saturation pH (25°C)	-	-		6.41
pH (Client Data)	pH units	-		7.01
Temperature (Client Data)	°C	-		9



Michelle Dubien
Data Specialist

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		Client I.D.	LPC
		Sample I.D.	24-007169-1
		Date Collected	2024-03-14
Parameter	**Units**	**R.L.**	-
Benzene	µg/L	0.5	1.1
Ethylbenzene	µg/L	0.5	0.6
Toluene	µg/L	0.5	<0.5
Xylene, m,p-	µg/L	1	<1
Xylene, m,p,o-	µg/L	1.1	<1.1
Xylene, o-	µg/L	0.5	<0.5

Michelle Dubien
Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-008298 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Mar-28
DATE REPORTED: 2024-Apr-03
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Cond/pH/Alk Auto (Liquid)	3	OTTAWA	SBOUDREAU	2024-Apr-01	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
Ammonia (Liquid)	3	KINGSTON	JYEARWOOD	2024-Apr-03	NH3-001	SM 4500NH3

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

			Client I.D.	SW14	SW15	SW18
			Sample I.D.	24-008298-1	24-008298-2	24-008298-3
			Date Collected	2024-03-27	2024-03-27	2024-03-27
Parameter	**Units**	**R.L.**		-	-	-
pH @25°C	pH units	-		8.12	8.23	8.33
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		<0.05	5.55	0.06
pH (Client Data)	pH units	-		8.17	8.28	8.31
Temperature (Client Data)	°C	-		6.8	10.1	5.8

Michelle Dubien
Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-009823 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Apr-11
DATE REPORTED: 2024-Apr-15
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Cond/pH/Alk Auto (Liquid)	3	OTTAWA	SLOZO	2024-Apr-12	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
Ammonia (Liquid)	3	KINGSTON	KDIBBITS	2024-Apr-15	NH3-001	SM 4500NH3

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

			Client I.D.	SW14	SW15	SW18
			Sample I.D.	24-009823-1	24-009823-2	24-009823-3
			Date Collected	2024-04-10	2024-04-10	2024-04-10
Parameter	**Units**	**R.L.**		-	-	-
pH @25°C	pH units	-		8.23	8.23	8.26
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		<0.05	0.07	<0.05

Michelle Dubien
Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-011660 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
2378 Holly Lane
Ottawa, ON K1V 7P1

Attention: Kayla Pantaleo

DATE RECEIVED: 2024-Apr-29
DATE REPORTED: 2024-May-15
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay OPS SW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	2	OTTAWA	LMACGREGOR	2024-Apr-30	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	JYEARWOOD	2024-May-06	BOD-001	SM 5210B
COD (Liquid)	2	KINGSTON	EHINCH	2024-May-13	COD-001	SM 5220D
Colour (Liquid)	1	OTTAWA	STAILLON	2024-May-03	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	2	OTTAWA	SBOUDREAU	2024-Apr-29	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	1	KINGSTON	JMACINNES	2024-May-01	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	2	OTTAWA	VKASYAN	2024-Apr-30	C-OC-01	EPA 415.2
Ion Balance (Calc.)	2	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	2	OTTAWA	STAILLON	2024-May-06	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	2	OTTAWA	AOZKAYMAK	2024-May-02	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	2	OTTAWA	APRUDYVUS	2024-Apr-30	D-ICP-01	SM 3120B
Mercury (Liquid)	2	OTTAWA	TBENNETT	2024-Apr-30	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	2	KINGSTON	JYEARWOOD	2024-May-07	NH3-001	SM 4500NH3
PCB's (Liquid)	1	KINGSTON	CSUMMERHAYS	2024-May-01	PCB-001	EPA 8081
Phenols (Liquid)	2	KINGSTON	JMACINNES	2024-May-06	PHEN-01	MECP E3179
TP & TKN (Liquid)	2	KINGSTON	KDIBBITS	2024-May-03	TPTKN-001	MECP E3516.2
TSS (Liquid)	1	KINGSTON	DCASSIDY	2024-May-07	TSS-001	SM 2540D
Turbidity (Liquid)	1	OTTAWA	STAILLON	2024-May-01	A-TURB-01	SM 2130B
VOC-Volatiles Full (Water)	2	RICHMOND_HILL	JEVANS	2024-Apr-30	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

Michelle Dubien
Data Specialist

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Parameter	Units	R.L.	Client I.D.	LPC 1	LPC 2
			Sample I.D.	24-011660-1	24-011660-2
			Date Collected	2024-04-25	2024-04-25
				-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		1050	617
TDS (Calc. from Cond.)	mg/L	3		1670	860
Conductivity @25°C	uS/cm	1		2990	1570
pH @25°C	pH units	-		7.88	7.64
Colour	TCU	2			9
Turbidity	NTU	0.1			476
Fluoride	mg/L	0.1		<0.7	<0.1
Chloride	mg/L	0.5		304	135
Nitrate (N)	mg/L	0.05		1.87	<0.05
Nitrite (N)	mg/L	0.05		<0.40	<0.05
Sulphate	mg/L	1		100	37
BOD5	mg/L	3		<3	
Total Suspended Solids	mg/L	3			180
Phosphorus (Total)	mg/L	0.01		5.67	0.03
Total Kjeldahl Nitrogen	mg/L	0.1		97.1	15.1
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		80.9	13.8
Ammonia (N)-unionized	mg/L	0.01			0.07
Dissolved Organic Carbon	mg/L	0.2		45.6	11.5
Cyanide (WAD)	mg/L	0.005			<0.005
Phenolics	mg/L	0.001		0.001	<0.001
COD	mg/L	5		389	45

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			Client I.D.	LPC 1	LPC 2
			Sample I.D.	24-011660-1	24-011660-2
			Date Collected	2024-04-25	2024-04-25
Parameter	Units	R.L.		-	-
Hardness (as CaCO3)	mg/L	-		900	600
Aluminum (Total)	mg/L	0.01		1.88	0.08
Barium (Total)	mg/L	0.001		1.87	0.273
Beryllium (Total)	mg/L	0.001		<0.001	<0.001
Boron (Total)	mg/L	0.005		3.00	0.304
Cadmium (Total)	mg/L	0.005		<0.005	<0.005
Calcium (Total)	mg/L	0.02		284	187
Chromium (Total)	mg/L	0.002		0.087	<0.002
Cobalt (Total)	mg/L	0.005		0.027	<0.005
Copper (Total)	mg/L	0.002		0.085	<0.002
Iron (Total)	mg/L	0.005		158	23.8
Lead (Total)	mg/L	0.02		<0.02	<0.02
Magnesium (Total)	mg/L	0.02		45.7	28.7
Manganese (Total)	mg/L	0.001		1.23	0.460
Molybdenum (Total)	mg/L	0.01		<0.01	<0.01
Nickel (Total)	mg/L	0.01		0.06	<0.01
Phosphorus (Total)	mg/L	0.1		5.3	<0.1
Potassium (Total)	mg/L	0.1		98.9	14.2
Silver (Total)	mg/L	0.005		<0.005	<0.005
Sodium (Total)	mg/L	0.2		252	95.8
Strontium (Total)	mg/L	0.001		1.83	0.640

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			Client I.D.	LPC 1	LPC 2
			Sample I.D.	24-011660-1	24-011660-2
			Date Collected	2024-04-25	2024-04-25
Parameter	Units	R.L.		-	-
Tin (Total)	mg/L	0.05		<0.05	<0.05
Titanium (Total)	mg/L	0.005		0.188	<0.005
Vanadium (Total)	mg/L	0.005		0.056	<0.005
Zinc (Total)	mg/L	0.005		0.650	0.010
Antimony (Total)	mg/L	0.0005		0.0101	<0.0005
Arsenic (Total)	mg/L	0.0005		0.0431	0.0012
Selenium (Total)	mg/L	0.005		<0.005	<0.005
Thallium (Total)	mg/L	0.0003		0.0004	<0.0003
Uranium (Total)	mg/L	0.0003		0.0013	<0.0003
Chromium (VI)	mg/L	0.01		<0.01	<0.01
Mercury	mg/L	0.00002		0.00007	<0.00002
Anion Sum	meq/L	-		31.8	16.9
Cation Sum	meq/L	-		40.1	17.5
% Difference	%	-		11.4	1.81
Ion Ratio	-	-		0.795	0.964
Sodium Adsorption Ratio	-	-		3.67	1.72
TDS (Ion Sum Calc)	mg/L	1		1880	892
TDS(calc.)/EC(actual)	-	-		0.630	0.567
Conductivity Calc	µmho/cm	-		2510	1450
Conductivity Calc / Conductivity	-	-		0.840	0.923
Langelier Index(25°C)	-	-		1.84	1.21

Michelle Dubien
Data Specialist

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			Client I.D.	LPC 1	LPC 2
			Sample I.D.	24-011660-1	24-011660-2
			Date Collected	2024-04-25	2024-04-25
Parameter	**Units**	**R.L.**		-	-
Saturation pH (25°C)	-	-		6.04	6.43
pH (Client Data)	pH units	-		7.68	7.57
Temperature (Client Data)	°C	-		11.4	5.7

Michelle Dubien
Data Specialist

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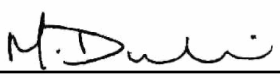
Parameter	Units	R.L.	Client I.D.	LPC 1	LPC 2
			Sample I.D.	24-011660-1	24-011660-2
			Date Collected	2024-04-25	2024-04-25
			-	-	
Acetone	µg/L	30			<30
Benzene	µg/L	0.5		<0.5	0.8
Bromodichloromethane	µg/L	2			<2
Bromoform	µg/L	5			<5
Bromomethane	µg/L	0.5			<0.5
Carbon Tetrachloride	µg/L	0.2			<0.2
Chlorobenzene	µg/L	0.5			0.8
Chloroform	µg/L	1			<1
Chloromethane (Methyl Chloride)	µg/L	2			<2
Dibromochloromethane	µg/L	2			<2
Ethylene Dibromide	µg/L	0.2			<0.2
Dichlorobenzene,1,2-	µg/L	0.5			<0.5
Dichlorobenzene,1,3-	µg/L	0.5			<0.5
Dichlorobenzene,1,4-	µg/L	0.5			1.0
Dichloroethane,1,1-	µg/L	0.5			<0.5
Dichloroethane,1,2-	µg/L	0.5			<0.5
Dichloroethylene,1,1-	µg/L	0.5			<0.5
Dichloroethylene,1,2-cis-	µg/L	0.5			<0.5
Dichloroethylene,1,2-trans-	µg/L	0.5			<0.5
Dichloropropane,1,2-	µg/L	0.5			<0.5
Dichloropropene,1,3-cis-	µg/L	0.5			<0.5



Michelle Dubien
Data Specialist

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	Client I.D.		LPC 1	LPC 2
	Sample I.D.		24-011660-1	24-011660-2
	Date Collected		2024-04-25	2024-04-25
Parameter	**Units**	**R.L.**	-	-
Dichloropropene,1,3-trans-	µg/L	0.5		<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5
Dichloromethane (Methylene Chloride)	µg/L	5		<5
Methyl Ethyl Ketone	µg/L	2		<2
Methyl Isobutyl Ketone	µg/L	20		<20
Methyl tert-Butyl Ether (MTBE)	µg/L	2		<2
Styrene	µg/L	0.5		<0.5
Tetrachloroethane,1,1,1,2-	µg/L	0.5		<0.5
Tetrachloroethane,1,1,2,2-	µg/L	0.5		<0.5
Tetrachloroethylene	µg/L	0.5		<0.5
Toluene	µg/L	0.5	<0.5	<0.5
Trichlorobenzene,1,2,4-	µg/L	0.5		<0.5
Trichloroethane,1,1,1-	µg/L	0.5		<0.5
Trichloroethane,1,1,2-	µg/L	0.5		<0.5
Trichloroethylene	µg/L	0.5		<0.5
Trichlorofluoromethane (Freon 11)	µg/L	5		<5
Vinyl Chloride	µg/L	0.2		<0.2
Xylene, m,p-	µg/L	1	<1	<1
Xylene, m,p,o-	µg/L	1.1	<1.1	
Xylene, o-	µg/L	0.5	<0.5	<0.5

Michelle Dubien
Data Specialist

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		Client I.D.	LPC 2
		Sample I.D.	24-011660-2
		Date Collected	2024-04-25
Parameter	**Units**	**R.L.**	-
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05	<0.05
Identification Comment	-	-	-

Elevated RLs due to sample matrix interferences

Michelle Dubien
Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-011557 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
2378 Holly Lane
Ottawa, ON K1V 7P1

Attention: Kayla Pantaleo

DATE RECEIVED: 2024-Apr-26
DATE REPORTED: 2024-May-08
SAMPLE MATRIX: Sediment

CUSTOMER PROJECT: Lindsay OPS SW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
PCB's (Solid)	5	KINGSTON	CSUMMERHAYS	2024-Apr-30	PCB-003	EPA 8082A
TOC (Subcontracted)	5	TESTMARK	SISLAM	2024-May-07		Subcontracted

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

			Client I.D.	SW3	SW13	SCG-UPSTREAM	EMBAY A	EMBAY C
			Sample I.D.	24-011557-1	24-011557-2	24-011557-3	24-011557-4	24-011557-5
			Date Collected	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25
Parameter	**Units**	**R.L.**		-	-	-	-	-
Poly-Chlorinated Biphenyls (PCB's)	µg/g	0.3		<0.3	<0.3	<0.3	<0.3	<0.3
Identification Comment	-	-		-	-	-	-	-

Subcontracted Analyses

			Client I.D.	SW3	SW13	SCG-UPSTREAM	EMBAY A	EMBAY C
			Sample I.D.	24-011557-1	24-011557-2	24-011557-3	24-011557-4	24-011557-5
			Date Collected	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25
Parameter	**Units**	**R.L.**		-	-	-	-	-
Total Organic Carbon	%	-		2.0	26.6	3.2	16.3	10.7

Michelle Dubien
Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-011576 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
2378 Holly Lane
Ottawa, ON K1V 7P1

Attention: Kayla Pantaleo

DATE RECEIVED: 2024-Apr-26
DATE REPORTED: 2024-May-13
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS SW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	5	OTTAWA	PCURIEL	2024-May-01	A-IC-01	SM 4110B
BOD5 (Liquid)	5	KINGSTON	JWOLFE2	2024-May-03	BOD-001	SM 5210B
COD (Liquid)	5	KINGSTON	EHINCH	2024-May-10	COD-001	SM 5220D
Colour (Liquid)	5	OTTAWA	STAILLON	2024-Apr-30	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	7	OTTAWA	SBOUDREAU	2024-Apr-29	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	5	KINGSTON	JMACINNES	2024-May-01	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	5	OTTAWA	VKASYAN	2024-May-02	C-OC-01	EPA 415.2
Ion Balance (Calc.)	5	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	5	OTTAWA	STAILLON	2024-May-03	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	5	OTTAWA	AOZKAYMAK	2024-May-03	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	7	OTTAWA	APRUDYVUS	2024-Apr-29	D-ICP-01	SM 3120B
ICP/OES (Liquid)	7	OTTAWA	NHOGAN	2024-May-02	D-ICP-01	SM 3120B
Mercury (Liquid)	5	OTTAWA	TBENNETT	2024-May-01	D-HG-02	SM 3112B
Ammonia (Liquid)	7	KINGSTON	JYEARWOOD	2024-May-03	NH3-001	SM 4500NH3
PCB's (Liquid)	5	KINGSTON	CSUMMERHAYS	2024-May-01	PCB-001	EPA 8081
Phenols (Liquid)	5	KINGSTON	JMACINNES	2024-May-02	PHEN-01	MECP E3179
TP & TKN (Liquid)	5	KINGSTON	KDIBBITS	2024-May-02	TPTKN-001	MECP E3516.2
TSS (Liquid)	2	KINGSTON	DCASSIDY	2024-May-07	TSS-001	SM 2540D
Turbidity (Liquid)	7	OTTAWA	PLUSSIER	2024-Apr-29	A-TURB-01	SM 2130B

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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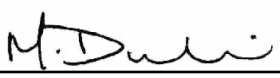
Parameter	Units	R.L.	Client I.D.	SCG-UPSTREAM	SCG-DOWNSTREAM	EMBAY A	EMBAY B	EMBAY C
			Sample I.D.	24-011576-1	24-011576-2	24-011576-3	24-011576-4	24-011576-5
			Date Collected	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		180	205	193	205	205
Conductivity @25°C	uS/cm	1		496	519	570	513	520
pH @25°C	pH units	-		8.27	8.18	8.15	8.21	8.20
Colour	TCU	2		19	29	24	28	29
Turbidity	NTU	0.1		5.4	2.9	2.1	1.6	2.8
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		40.6	33.8	52.9	33.3	33.9
Nitrate (N)	mg/L	0.05		1.14	1.70	1.74	1.72	1.84
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		13	14	16	14	14
BOD5	mg/L	3		<3	<3	<3	<3	<3
Phosphorus (Total)	mg/L	0.01		0.04	0.03	0.03	0.03	0.02
Total Kjeldahl Nitrogen	mg/L	0.1		1.3	0.7	0.8	0.7	0.6
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.53	0.10	0.18	0.08	0.06
Ammonia (N)-unionized	mg/L	0.01		0.07	0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		7.1	8.0	4.3	8.3	8.1
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		35	30	31	30	35
Aluminum	mg/L	0.01		0.02	0.03	0.04	0.03	0.03
Hardness (as CaCO3)	mg/L	-		216	238	252	237	242



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	Client I.D.	SCG-UPSTREAM	SCG-DOWNSTREAM	EMBAY A	EMBAY B	EMBAY C
	Sample I.D.	24-011576-1	24-011576-2	24-011576-3	24-011576-4	24-011576-5
	Date Collected	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25
Parameter	**Units** **R.L.**	-	-	-	-	-
Aluminum (Total)	mg/L 0.01	0.08	0.05	0.04	0.04	0.05
Barium (Total)	mg/L 0.001	0.034	0.035	0.031	0.034	0.035
Boron (Total)	mg/L 0.005	0.010	0.011	0.017	0.011	0.012
Calcium (Total)	mg/L 0.02	71.3	80.3	71.2	80.0	82.0
Iron (Total)	mg/L 0.005	0.127	0.076	0.006	0.061	0.071
Magnesium (Total)	mg/L 0.02	9.21	8.99	8.73	9.00	9.02
Manganese (Total)	mg/L 0.001	0.034	0.038	0.005	0.034	0.057
Phosphorus (Total)	mg/L 0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium (Total)	mg/L 0.1	2.1	2.1	2.4	2.1	2.3
Sodium (Total)	mg/L 0.2	21.9	18.4	27.5	18.3	18.8
Strontium (Total)	mg/L 0.001	0.200	0.219	0.211	0.217	0.222
Tin (Total)	mg/L 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium (Total)	mg/L 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc (Total)	mg/L 0.005	0.007	0.009	<0.005	0.010	0.027
Antimony (Total)	mg/L 0.0001	0.0004	0.0003	0.0002	0.0003	0.0004
Arsenic (Total)	mg/L 0.0001	0.0003	0.0002	0.0002	0.0002	0.0002
Beryllium (Total)	mg/L 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium (Total)	mg/L 0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium (Total)	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Total)	mg/L 0.0001	0.0002	0.0002	0.0003	0.0002	0.0002
Copper (Total)	mg/L 0.0001	0.0008	0.0006	0.0019	0.0006	0.0006

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Parameter	Units	R.L.	Client I.D.	SCG-UPSTREAM	SCG-DOWNSTREAM	EMBAY A	EMBAY B	EMBAY C
			Sample I.D.	24-011576-1	24-011576-2	24-011576-3	24-011576-4	24-011576-5
			Date Collected	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25
				-	-	-	-	-
Lead (Total)	mg/L	0.00002		0.00033	0.00014	0.00024	0.00008	0.00009
Molybdenum (Total)	mg/L	0.0001		0.0003	0.0003	0.0009	0.0003	0.0003
Nickel (Total)	mg/L	0.0002		0.0008	0.0005	0.0006	0.0009	0.0009
Selenium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001		0.0001	0.0001	0.0001	0.0001	0.0001
Thallium (Total)	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005		0.00063	0.00081	0.00062	0.00080	0.00083
Vanadium (Total)	mg/L	0.0001		0.0005	0.0005	0.0004	0.0004	0.0004
Chromium (VI)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		5.09	5.47	5.80	5.45	5.47
Cation Sum	meq/L	-		5.33	5.61	5.54	5.59	5.72
% Difference	%	-		2.32	1.29	2.36	1.28	2.24
Ion Ratio	-	-		0.955	0.974	1.05	0.975	0.956
Sodium Adsorption Ratio	-	-		0.648	0.519	0.819	0.518	0.525
TDS (Ion Sum Calc)	mg/L	1		271	288	302	287	291
TDS(calc.)/EC(actual)	-	-		0.547	0.556	0.530	0.560	0.560
Conductivity Calc	µmho/cm	-		514	538	562	536	543
Conductivity Calc / Conductivity	-	-		1.04	1.04	0.986	1.04	1.05
Langelier Index(25°C)	-	-		0.936	0.955	0.846	0.983	0.982
Saturation pH (25°C)	-	-		7.33	7.23	7.30	7.23	7.22



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		Client I.D.	SCG-UPSTREAM	SCG-DOWNSTREAM	EMBAY A	EMBAY B	EMBAY C
		Sample I.D.	24-011576-1	24-011576-2	24-011576-3	24-011576-4	24-011576-5
		Date Collected	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25
Parameter	**Units**	**R.L.**	-	-	-	-	-
pH (Client Data)	pH units	-	8.87	8.85	8.27	8.84	8.87
Temperature (Client Data)	°C	-	10.7	8.7	8.7	9.5	9.3

		Client I.D.	NEARSHORE 1	NEARSHORE 2
		Sample I.D.	24-011576-6	24-011576-7
		Date Collected	2024-04-25	2024-04-25
Parameter	**Units**	**R.L.**	-	-
pH @25°C	pH units	-	8.12	8.06
Turbidity	NTU	0.1	1.8	1.2
Total Suspended Solids	mg/L	3	<3	8
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.17	0.15
Iron	mg/L	0.005	0.010	0.015
Iron (Total)	mg/L	0.005	0.068	0.076
pH (Client Data)	pH units	-	8.68	8.52
Temperature (Client Data)	°C	-	9.6	9.8

		Client I.D.	SCG-UPSTREAM	SCG-DOWNSTREAM	EMBAY A	EMBAY B	EMBAY C
		Sample I.D.	24-011576-1	24-011576-2	24-011576-3	24-011576-4	24-011576-5
		Date Collected	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25
Parameter	**Units**	**R.L.**	-	-	-	-	-
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Identification Comment	-	-	-	-	-	-	-

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-011585 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
2378 Holly Lane
Ottawa, ON K1V 7P1

Attention: Kayla Pantaleo

DATE RECEIVED: 2024-Apr-26
DATE REPORTED: 2024-May-13
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS SW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	7	OTTAWA	PCURIEL	2024-May-03	A-IC-01	SM 4110B
BOD5 (Liquid)	7	KINGSTON	JYEARWOOD	2024-May-06	BOD-001	SM 5210B
COD (Liquid)	7	KINGSTON	EHINCH	2024-May-10	COD-001	SM 5220D
Colour (Liquid)	7	OTTAWA	STAILLON	2024-Apr-30	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	7	OTTAWA	SBOUDREAU	2024-Apr-29	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	7	KINGSTON	JMACINNES	2024-May-01	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	7	OTTAWA	VKASYAN	2024-May-02	C-OC-01	EPA 415.2
Ion Balance (Calc.)	7	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	7	OTTAWA	STAILLON	2024-May-03	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	7	OTTAWA	AOZKAYMAK	2024-May-03	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	7	OTTAWA	APRUDYVUS	2024-Apr-30	D-ICP-01	SM 3120B
ICP/OES (Liquid)	7	OTTAWA	NHOGAN	2024-May-02	D-ICP-01	SM 3120B
Mercury (Liquid)	7	OTTAWA	TBENNETT	2024-May-01	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	7	KINGSTON	KDIBBITS	2024-May-06	NH3-001	SM 4500NH3
PCB's (Liquid)	7	KINGSTON	CSUMMERHAYS	2024-May-01	PCB-001	EPA 8081
Phenols (Liquid)	7	KINGSTON	JMACINNES	2024-May-02	PHEN-01	MECP E3179
Tannins (Liquid)	2	KINGSTON	EHINCH	2024-May-01	TAN-001	SM 5550
TP & TKN (Liquid)	7	KINGSTON	KDIBBITS	2024-May-02	TPTKN-001	MECP E3516.2
TSS (Liquid)	7	KINGSTON	MCLOSS	2024-May-07	TSS-001	SM 2540D
Turbidity (Liquid)	7	OTTAWA	PLUSSIER	2024-Apr-29	A-TURB-01	SM 2130B
VOC-Volatiles Full (Water)	3	RICHMOND_HILL	JEVANS	2024-Apr-30	C-VOC-02	EPA 8260

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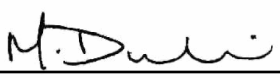
Parameter	Units	R.L.	Client I.D.	SW-2	SW-3	SW-4	SW-14	SW-18
			Sample I.D.	24-011585-1	24-011585-2	24-011585-3	24-011585-4	24-011585-5
			Date Collected	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		311	310	293	260	236
Conductivity @25°C	uS/cm	1		886	795	636	593	589
pH @25°C	pH units	-		7.96	8.21	8.25	8.19	8.18
Colour	TCU	2		6	9	15	17	24
Turbidity	NTU	0.1		2.3	3.3	1.9	1.0	1.0
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		83.8	67.3	24.3	31.0	42.7
Nitrate (N)	mg/L	0.05		0.26	<0.05	2.14	1.07	0.08
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		29	18	12	12	14
BOD5	mg/L	3		<3	<3	<3	<3	<3
Total Suspended Solids	mg/L	3		4	3	6	5	<3
Phosphorus (Total)	mg/L	0.01		0.02	0.02	0.02	0.04	0.03
Total Kjeldahl Nitrogen	mg/L	0.1		0.4	0.4	0.4	0.6	0.5
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.17	0.16	<0.05	<0.05	0.06
Ammonia (N)-unionized	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		3.6	4.2	5.0	5.4	5.9
Tannin & Lignin	mg/L	0.5					<0.5	<0.5
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		19	20	17	30	23



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	Client I.D.	SW-2	SW-3	SW-4	SW-14	SW-18
	Sample I.D.	24-011585-1	24-011585-2	24-011585-3	24-011585-4	24-011585-5
	Date Collected	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25
Parameter	**Units** **R.L.**	-	-	-	-	-
Aluminum	mg/L 0.01	0.04	0.04	0.04	0.04	0.03
Hardness (as CaCO3)	mg/L -	360	316	321	287	259
Aluminum (Total)	mg/L 0.01	0.05	0.06	0.06	0.06	0.04
Barium (Total)	mg/L 0.001	0.084	0.047	0.035	0.035	0.034
Boron (Total)	mg/L 0.005	0.019	0.017	0.010	0.013	0.026
Calcium (Total)	mg/L 0.02	126	112	117	103	92.0
Iron (Total)	mg/L 0.005	0.096	0.143	0.039	0.058	0.050
Magnesium (Total)	mg/L 0.02	11.2	8.78	7.23	7.19	7.12
Manganese (Total)	mg/L 0.001	0.045	0.033	0.013	0.014	0.009
Phosphorus (Total)	mg/L 0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium (Total)	mg/L 0.1	1.8	2.2	1.5	2.2	3.3
Sodium (Total)	mg/L 0.2	47.9	40.1	16.5	21.5	28.4
Strontium (Total)	mg/L 0.001	0.377	0.295	0.291	0.280	0.274
Tin (Total)	mg/L 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium (Total)	mg/L 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc (Total)	mg/L 0.005	0.020	0.008	0.007	0.012	0.008
Antimony (Total)	mg/L 0.0001	0.0004	0.0003	0.0002	0.0003	0.0003
Arsenic (Total)	mg/L 0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
Beryllium (Total)	mg/L 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium (Total)	mg/L 0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium (Total)	mg/L 0.001	<0.001	<0.001	<0.001	0.001	<0.001

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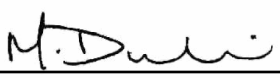
Parameter	Units	R.L.	Client I.D.	SW-2	SW-3	SW-4	SW-14	SW-18
			Sample I.D.	24-011585-1	24-011585-2	24-011585-3	24-011585-4	24-011585-5
			Date Collected	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25
				-	-	-	-	-
Cobalt (Total)	mg/L	0.0001		0.0003	0.0002	0.0002	0.0002	0.0002
Copper (Total)	mg/L	0.0001		0.0009	0.0007	0.0007	0.0014	0.0009
Lead (Total)	mg/L	0.00002		0.00005	0.00007	0.00004	0.00006	0.00005
Molybdenum (Total)	mg/L	0.0001		0.0002	0.0002	0.0001	0.0003	0.0002
Nickel (Total)	mg/L	0.0002		0.0006	0.0004	0.0003	0.0004	0.0006
Selenium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001		<0.0001	<0.0001	<0.0001	0.0001	0.0001
Thallium (Total)	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005		0.00066	0.00237	0.00061	0.00050	0.00055
Vanadium (Total)	mg/L	0.0001		0.0001	0.0002	0.0003	0.0003	0.0002
Chromium (VI)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		9.21	8.49	6.94	6.38	6.22
Cation Sum	meq/L	-		9.32	8.12	7.18	6.73	6.51
% Difference	%	-		0.632	2.19	1.69	2.68	2.29
Ion Ratio	-	-		0.987	1.04	0.967	0.948	0.955
Sodium Adsorption Ratio	-	-		1.10	0.982	0.401	0.552	0.768
TDS (Ion Sum Calc)	mg/L	1		487	435	364	337	330
TDS(calc.)/EC(actual)	-	-		0.550	0.548	0.572	0.569	0.559
Conductivity Calc	µmho/cm	-		882	788	660	621	612
Conductivity Calc / Conductivity	-	-		0.996	0.991	1.04	1.05	1.04



Michelle Dubien
Data Specialist

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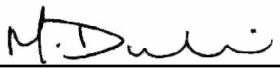
		Client I.D.	SW-2	SW-3	SW-4	SW-14	SW-18
		Sample I.D.	24-011585-1	24-011585-2	24-011585-3	24-011585-4	24-011585-5
		Date Collected	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25
Parameter	**Units**	**R.L.**	-	-	-	-	-
Langelier Index(25°C)	-	-	1.09	1.29	1.33	1.16	1.07
Saturation pH (25°C)	-	-	6.87	6.92	6.92	7.03	7.11
pH (Client Data)	pH units	-	8.25	8.52	8.87	8.45	8.52
Temperature (Client Data)	°C	-	4.9	2.9	3.1	10.9	14.3



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	Client I.D.		WPCP Effluent	DUP
	Sample I.D.		24-011585-6	24-011585-7
	Date Collected		2024-04-25	2024-04-25
Parameter	Units	R.L.	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	249	250
Conductivity @25°C	uS/cm	1	1620	1620
pH @25°C	pH units	-	7.91	7.91
Colour	TCU	2	11	11
Turbidity	NTU	0.1	3.7	4.4
Fluoride	mg/L	0.1	<0.1	<0.1
Chloride	mg/L	0.5	310	309
Nitrate (N)	mg/L	0.05	8.39	8.37
Nitrite (N)	mg/L	0.05	<0.05	<0.05
Sulphate	mg/L	1	63	63
BOD5	mg/L	3	<3	<3
Total Suspended Solids	mg/L	3	15	16
Phosphorus (Total)	mg/L	0.01	0.10	0.10
Total Kjeldahl Nitrogen	mg/L	0.1	1.2	1.1
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.10	0.08
Ammonia (N)-unionized	mg/L	0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2	3.1	3.2
Cyanide (WAD)	mg/L	0.005	<0.005	<0.005
Phenolics	mg/L	0.001	<0.001	<0.001
COD	mg/L	5	28	27
Aluminum	mg/L	0.01	0.11	0.12

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			Client I.D.	WPCP Effluent	DUP
			Sample I.D.	24-011585-6	24-011585-7
			Date Collected	2024-04-25	2024-04-25
Parameter	Units	R.L.		-	-
Hardness (as CaCO3)	mg/L	-		367	377
Aluminum (Total)	mg/L	0.01		2.39	2.48
Barium (Total)	mg/L	0.001		0.069	0.070
Boron (Total)	mg/L	0.005		0.123	0.128
Calcium (Total)	mg/L	0.02		124	127
Iron (Total)	mg/L	0.005		0.032	0.032
Magnesium (Total)	mg/L	0.02		13.8	14.2
Manganese (Total)	mg/L	0.001		0.014	0.014
Phosphorus (Total)	mg/L	0.1		<0.1	<0.1
Potassium (Total)	mg/L	0.1		12.2	12.6
Sodium (Total)	mg/L	0.2		186	191
Strontium (Total)	mg/L	0.001		0.388	0.399
Tin (Total)	mg/L	0.05		<0.05	<0.05
Titanium (Total)	mg/L	0.005		<0.005	<0.005
Zinc (Total)	mg/L	0.005		0.047	0.048
Antimony (Total)	mg/L	0.0001		0.0005	0.0005
Arsenic (Total)	mg/L	0.0001		0.0002	0.0002
Beryllium (Total)	mg/L	0.0001		<0.0001	<0.0001
Cadmium (Total)	mg/L	0.000015		0.000026	0.000030
Chromium (Total)	mg/L	0.001		<0.001	<0.001
Cobalt (Total)	mg/L	0.0001		0.0004	0.0004

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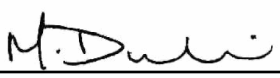
	Client I.D.		WPCP Effluent	DUP
	Sample I.D.		24-011585-6	24-011585-7
	Date Collected		2024-04-25	2024-04-25
Parameter	Units	R.L.	-	-
Copper (Total)	mg/L	0.0001	0.0058	0.0062
Lead (Total)	mg/L	0.00002	0.00046	0.00050
Molybdenum (Total)	mg/L	0.0001	0.0014	0.0014
Nickel (Total)	mg/L	0.0002	0.0019	0.0020
Selenium (Total)	mg/L	0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001	0.0001	0.0001
Thallium (Total)	mg/L	0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005	0.00041	0.00043
Vanadium (Total)	mg/L	0.0001	0.0003	0.0003
Chromium (VI)	mg/L	0.001	<0.001	<0.001
Mercury	mg/L	0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-	15.6	15.6
Cation Sum	meq/L	-	15.7	16.2
% Difference	%	-	0.303	1.67
Ion Ratio	-	-	0.994	0.967
Sodium Adsorption Ratio	-	-	4.22	4.28
TDS (Ion Sum Calc)	mg/L	1	896	905
TDS(calc.)/EC(actual)	-	-	0.553	0.557
Conductivity Calc	µmho/cm	-	1580	1600
Conductivity Calc / Conductivity	-	-	0.978	0.985
Langelier Index(25°C)	-	-	0.907	0.911



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			Client I.D.	WPCP Effluent	DUP
			Sample I.D.	24-011585-6	24-011585-7
			Date Collected	2024-04-25	2024-04-25
Parameter	**Units**	**R.L.**		-	-
Saturation pH (25°C)	-	-		7.00	7.00
pH (Client Data)	pH units	-		8.01	8.01
Temperature (Client Data)	°C	-		12.0	12.0

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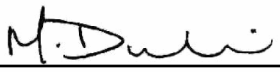
	Client I.D.		SW-3	SW-14	SW-18
	Sample I.D.		24-011585-2	24-011585-4	24-011585-5
	Date Collected		2024-04-25	2024-04-25	2024-04-25
Parameter	**Units**	**R.L.**	-	-	-
Acetone	µg/L	30	<30	<30	<30
Benzene	µg/L	0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	2	<2	<2	<2
Bromoform	µg/L	5	<5	<5	<5
Bromomethane	µg/L	0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	µg/L	0.2	<0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5
Chloroform	µg/L	1	<1	<1	<1
Chloromethane (Methyl Chloride)	µg/L	2	<2	<2	<2
Dibromochloromethane	µg/L	2	<2	<2	<2
Ethylene Dibromide	µg/L	0.2	<0.2	<0.2	<0.2
Dichlorobenzene,1,2-	µg/L	0.5	<0.5	<0.5	<0.5
Dichlorobenzene,1,3-	µg/L	0.5	<0.5	<0.5	<0.5
Dichlorobenzene,1,4-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloroethane,1,1-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloroethane,1,2-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,1-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,2-cis-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,2-trans-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloropropane,1,2-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloropropene,1,3-cis-	µg/L	0.5	<0.5	<0.5	<0.5



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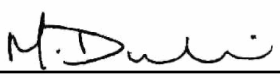
			Client I.D.	SW-3	SW-14	SW-18
			Sample I.D.	24-011585-2	24-011585-4	24-011585-5
			Date Collected	2024-04-25	2024-04-25	2024-04-25
Parameter	Units	R.L.		-	-	-
Dichloropropene,1,3-trans-	µg/L	0.5		<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5
Dichloromethane (Methylene Chloride)	µg/L	5		<5	<5	<5
Methyl Ethyl Ketone	µg/L	2		<2	<2	<2
Methyl Isobutyl Ketone	µg/L	20		<20	<20	<20
Methyl tert-Butyl Ether (MTBE)	µg/L	2		<2	<2	<2
Styrene	µg/L	0.5		<0.5	<0.5	<0.5
Tetrachloroethane,1,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5
Tetrachloroethane,1,1,2,2-	µg/L	0.5		<0.5	<0.5	<0.5
Tetrachloroethylene	µg/L	0.5		<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5
Trichlorobenzene,1,2,4-	µg/L	0.5		<0.5	<0.5	<0.5
Trichloroethane,1,1,1-	µg/L	0.5		<0.5	<0.5	<0.5
Trichloroethane,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5
Trichloroethylene	µg/L	0.5		<0.5	<0.5	<0.5
Trichlorofluoromethane (Freon 11)	µg/L	5		<5	<5	<5
Vinyl Chloride	µg/L	0.2		<0.2	<0.2	<0.2
Xylene, m,p-	µg/L	1		<1	<1	<1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5



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		Client I.D.	SW-2	SW-3	SW-4	SW-14	SW-18
		Sample I.D.	24-011585-1	24-011585-2	24-011585-3	24-011585-4	24-011585-5
		Date Collected	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25
Parameter	**Units**	**R.L.**	-	-	-	-	-
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Identification Comment	-	-	-	-	-	-	-

		Client I.D.	WPCP Effluent	DUP
		Sample I.D.	24-011585-6	24-011585-7
		Date Collected	2024-04-25	2024-04-25
Parameter	**Units**	**R.L.**	-	-
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05	<0.05	<0.05
Identification Comment	-	-	-	-

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-012320 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-May-03
DATE REPORTED: 2024-May-07
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Cond/pH/Alk Auto (Liquid)	3	OTTAWA	SBOUDREAU	2024-May-06	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
Ammonia (Liquid)	3	KINGSTON	KDIBBITS	2024-May-06	NH3-001	SM 4500NH3

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

			Client I.D.	SW14	SW15	SW18
			Sample I.D.	24-012320-1	24-012320-2	24-012320-3
			Date Collected	2024-05-01	2024-05-01	2024-05-01
Parameter	**Units**	**R.L.**		-	-	-
pH @25°C	pH units	-		7.94	8.27	8.14
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.09	0.06	<0.05
pH (Client Data)	pH units	-		8.3	8.58	8.1
Temperature (Client Data)	°C	-		13.2	15.1	10.6

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-013112 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
112 Commerce Park Dr Unit L
Barrie, ON L4N 8W8

Attention: Kayla Pantaleo

DATE RECEIVED: 2024-May-08
DATE REPORTED: 2024-May-27
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Lindsay OPS
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	52	OTTAWA	PCURIEL	2024-May-15	A-IC-01	SM 4110B
COD (Liquid)	52	KINGSTON	EHINCH	2024-May-21	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	52	OTTAWA	SLOZO	2024-May-14	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
DOC/DIC (Liquid)	52	OTTAWA	VKASYAN	2024-May-13	C-OC-01	EPA 415.2
Ion Balance (Calc.)	52	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	52	OTTAWA	STAILLON	2024-May-14	D-CRVI-01	MECP E3056
ICP/MS (Liquid)	52	OTTAWA	TPRICE	2024-May-14	D-ICPMS-01	EPA 200.8
ICP/OES (Liquid)	52	OTTAWA	APRUDYVUS	2024-May-13	D-ICP-01	SM 3120B
Mercury (Liquid)	52	OTTAWA	TBENNETT	2024-May-14	D-HG-02	SM 3112B
Ammonia (Liquid)	52	KINGSTON	JYEARWOOD	2024-May-17	NH3-001	SM 4500NH3
Phenols (Liquid)	52	KINGSTON	JMACINNES	2024-May-21	PHEN-01	MECP E3179
TP & TKN (Liquid)	52	KINGSTON	KDIBBITS	2024-May-15	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	52	RICHMOND_HILL	JEVANS	2024-May-16	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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	Client I.D.	12-91-I	12-91-II	13-91-I	13-91-II	14-07
	Sample I.D.	24-013112-1	24-013112-2	24-013112-3	24-013112-4	24-013112-5
	Date Collected	2024-05-07	2024-05-07	2024-05-06	2024-05-06	2024-05-06
Parameter	Units R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L 5	261	352	189	263	270
TDS (Calc. from Cond.)	mg/L 3	359	388	379	318	280
Conductivity @25°C	uS/cm 1	691	743	728	613	541
pH @25°C	pH units -	7.81	7.54	7.75	7.76	7.71
Fluoride	mg/L 0.1	<0.1	<0.1	0.2	<0.1	<0.1
Chloride	mg/L 0.5	34.2	3.3	97.7	26.3	2.5
Nitrate (N)	mg/L 0.05	0.12	<0.05	0.32	<0.05	<0.05
Nitrite (N)	mg/L 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L 1	45	30	20	9	5
Phosphorus (Total)	mg/L 0.01	0.13	0.06	0.20	0.44	0.60
Total Kjeldahl Nitrogen	mg/L 0.1	0.8	0.8	1.0	0.9	1.0
Ammonia (N)-Total (NH3+NH4)	mg/L 0.05	0.22	0.10	1.30	0.10	0.76
Dissolved Organic Carbon	mg/L 0.2	3.9	9.8	2.7	3.8	3.3
Phenolics	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L 5	26	29	35	52	46
Hardness (as CaCO3)	mg/L 0.02	346	364	314	245	270
Aluminum	mg/L 0.01	0.14	0.04	0.03	0.05	0.04
Barium	mg/L 0.001	0.147	0.050	0.140	0.034	0.042
Boron	mg/L 0.005	0.051	0.015	0.100	0.006	0.006
Calcium	mg/L 0.02	86.6	133	56.0	90.9	102
Iron	mg/L 0.005	0.235	2.15	0.336	0.016	<0.005

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Parameter	Units	R.L.	Client I.D.	12-91-I	12-91-II	13-91-I	13-91-II	14-07
			Sample I.D.	24-013112-1	24-013112-2	24-013112-3	24-013112-4	24-013112-5
			Date Collected	2024-05-07	2024-05-07	2024-05-06	2024-05-06	2024-05-06
				-	-	-	-	-
Magnesium	mg/L	0.02		31.6	7.63	42.3	4.24	3.66
Manganese	mg/L	0.001		0.021	0.724	0.007	0.001	<0.001
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		2.3	0.5	4.1	<0.1	0.4
Sodium	mg/L	0.2		12.4	3.2	13.0	20.6	2.5
Strontium	mg/L	0.001		0.820	0.304	1.71	0.212	0.186
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0005	0.0007	<0.0001	0.0001	<0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0003	0.0009	<0.0001	0.0002	0.0002
Copper	mg/L	0.0001		0.0008	0.0002	0.0001	0.0008	0.0005
Lead	mg/L	0.00002		0.00045	<0.00002	<0.00002	0.00010	<0.00002
Molybdenum	mg/L	0.0001		0.0004	0.0002	<0.0001	<0.0001	0.0001
Nickel	mg/L	0.0002		0.0006	0.0014	<0.0002	0.0003	<0.0002
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Michelle Dubien
Data Specialist

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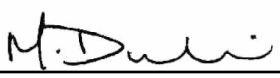
			Client I.D.	12-91-I	12-91-II	13-91-I	13-91-II	14-07
			Sample I.D.	24-013112-1	24-013112-2	24-013112-3	24-013112-4	24-013112-5
			Date Collected	2024-05-07	2024-05-07	2024-05-06	2024-05-06	2024-05-06
Parameter	**Units**	**R.L.**		-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00087	0.00414	<0.00005	0.00034	0.00040
Vanadium	mg/L	0.0001		0.0002	0.0002	<0.0001	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		7.12	7.77	6.98	6.20	5.58
Cation Sum	meq/L	-		7.57	7.58	7.15	5.79	5.57
% Difference	%	-		3.01	1.19	1.22	3.36	0.123
Ion Ratio	-	-		0.942	1.02	0.976	1.07	1.00
Sodium Adsorption Ratio	-	-		0.289	0.0730	0.320	0.573	0.0673
TDS (Ion Sum Calc)	mg/L	1		370	393	351	310	280
TDS(calc.)/EC(actual)	-	-		0.535	0.528	0.482	0.505	0.517
Conductivity Calc	µmho/cm	-		687	684	705	563	513
Conductivity Calc / Conductivity	-	-		0.994	0.921	0.969	0.918	0.949
Langelier Index(25°C)	-	-		0.711	0.759	0.322	0.696	0.708
Saturation pH (25°C)	-	-		7.10	6.78	7.43	7.06	7.00
pH (Client Data)	pH units	-		7.69	6.96	7.38	7.12	7.32
Temperature (Client Data)	°C	-		11.0	10.4	10.8	10.5	8.6



Michelle Dubien
Data Specialist

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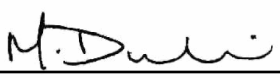
Parameter	Units	R.L.	Client I.D.	15-91-I	15-91-II	16-91-I	16-91-II	17-91-I
			Sample I.D.	24-013112-6	24-013112-7	24-013112-8	24-013112-9	24-013112-10
			Date Collected	2024-05-06	2024-05-06	2024-05-07	2024-05-07	2024-05-06
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		519	561	498	578	290
TDS (Calc. from Cond.)	mg/L	3		626	562	1140	1060	388
Conductivity @25°C	uS/cm	1		1160	1050	2070	1930	743
pH @25°C	pH units	-		7.60	7.12	7.38	7.13	7.69
Fluoride	mg/L	0.1		<0.1	<0.1	<0.7	<0.1	<0.1
Chloride	mg/L	0.5		23.7	1.7	317	260	32.6
Nitrate (N)	mg/L	0.05		2.08	<0.05	<0.40	<0.05	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.40	<0.05	<0.05
Sulphate	mg/L	1		60	2	10	<1	43
Phosphorus (Total)	mg/L	0.01		0.88	0.18	0.04	0.05	0.10
Total Kjeldahl Nitrogen	mg/L	0.1		2.9	0.9	4.4	4.5	0.4
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.83	0.43	2.84	2.71	0.41
Dissolved Organic Carbon	mg/L	0.2		7.5	11.4	14.8	17.8	4.1
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		64	45	100	108	14
Hardness (as CaCO3)	mg/L	0.02		566	578	682	630	335
Aluminum	mg/L	0.01		0.07	0.07	0.07	0.07	0.04
Barium	mg/L	0.001		0.131	0.081	1.07	0.314	0.072
Boron	mg/L	0.005		0.083	0.070	0.306	0.582	0.014
Calcium	mg/L	0.02		181	205	182	213	113
Iron	mg/L	0.005		0.039	58.4	11.4	30.3	0.161



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Data Specialist

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			Client I.D.	15-91-I	15-91-II	16-91-I	16-91-II	17-91-I
			Sample I.D.	24-013112-6	24-013112-7	24-013112-8	24-013112-9	24-013112-10
			Date Collected	2024-05-06	2024-05-06	2024-05-07	2024-05-07	2024-05-06
Parameter	Units	R.L.		-	-	-	-	-
Magnesium	mg/L	0.02		27.5	15.8	55.0	24.1	13.0
Manganese	mg/L	0.001		0.044	0.288	0.046	0.176	0.007
Phosphorus	mg/L	0.1		0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		3.7	0.6	6.4	6.6	1.0
Sodium	mg/L	0.2		27.0	7.8	154	140	21.3
Strontium	mg/L	0.001		0.455	0.526	1.49	0.608	0.273
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		0.013	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0001	0.0042	0.0002	0.0013	<0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0003	0.0005	0.0004	0.0006	0.0002
Copper	mg/L	0.0001		0.0005	0.0001	0.0002	0.0002	0.0003
Lead	mg/L	0.00002		<0.00002	<0.00004	<0.00002	<0.00004	0.00003
Molybdenum	mg/L	0.0001		0.0003	0.0004	0.0002	<0.0001	0.0005
Nickel	mg/L	0.0002		0.0022	0.0008	0.0162	0.0143	<0.0002
Selenium	mg/L	0.001		<0.001	<0.001	0.003	0.002	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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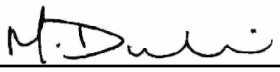
Parameter	Units	R.L.	Client I.D.	15-91-I	15-91-II	16-91-I	16-91-II	17-91-I
			Sample I.D.	24-013112-6	24-013112-7	24-013112-8	24-013112-9	24-013112-10
			Date Collected	2024-05-06	2024-05-06	2024-05-07	2024-05-07	2024-05-06
				-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	0.00040
Vanadium	mg/L	0.0001		<0.0001	0.0008	0.0004	0.0009	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		12.4	11.3	20.1	19.1	7.61
Cation Sum	meq/L	-		12.7	15.1	21.3	20.7	7.68
% Difference	%	-		0.870	14.4	2.94	3.90	0.457
Ion Ratio	-	-		0.983	0.748	0.943	0.925	0.991
Sodium Adsorption Ratio	-	-		0.493	0.141	2.56	2.42	0.505
TDS (Ion Sum Calc)	mg/L	1		645	629	1070	1030	398
TDS(calc.)/EC(actual)	-	-		0.554	0.599	0.518	0.534	0.536
Conductivity Calc	µmho/cm	-		1090	969	1920	1740	715
Conductivity Calc / Conductivity	-	-		0.938	0.922	0.925	0.902	0.962
Langelier Index(25°C)	-	-		1.10	0.709	0.826	0.707	0.752
Saturation pH (25°C)	-	-		6.50	6.41	6.55	6.42	6.94
pH (Client Data)	pH units	-		6.71	6.52	6.56	6.97	7.78
Temperature (Client Data)	°C	-		11.1	11.3	12.5	13.9	10.4



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	Client I.D.	17-91-II	18-91	19-91	20-91-I	20-91-II
	Sample I.D.	24-013112-11	24-013112-12	24-013112-13	24-013112-14	24-013112-15
	Date Collected	2024-05-06	2024-05-06	2024-05-06	2024-05-06	2024-05-06
Parameter	Units R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L 5	360	292	340	275	333
TDS (Calc. from Cond.)	mg/L 3	382	395	448	379	456
Conductivity @25°C	uS/cm 1	732	756	849	727	863
pH @25°C	pH units -	7.62	7.77	7.78	7.90	7.90
Fluoride	mg/L 0.1	<0.1	<0.1	<0.1	0.4	0.4
Chloride	mg/L 0.5	1.2	46.5	42.9	58.2	72.8
Nitrate (N)	mg/L 0.05	0.43	<0.05	<0.05	<0.05	<0.05
Nitrite (N)	mg/L 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L 1	25	28	46	8	<1
Phosphorus (Total)	mg/L 0.01	0.98	0.31	0.42	0.15	0.11
Total Kjeldahl Nitrogen	mg/L 0.1	0.5	0.3	1.0	4.5	1.4
Ammonia (N)-Total (NH3+NH4)	mg/L 0.05	0.45	0.20	1.00	4.52	0.56
Dissolved Organic Carbon	mg/L 0.2	2.7	3.6	4.0	4.6	6.5
Phenolics	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L 5	50	39	42	40	36
Hardness (as CaCO3)	mg/L 0.02	371	346	390	237	360
Aluminum	mg/L 0.01	0.05	0.04	0.04	0.02	0.03
Barium	mg/L 0.001	0.047	0.132	0.149	0.472	1.81
Boron	mg/L 0.005	0.011	0.009	0.013	0.258	0.163
Calcium	mg/L 0.02	138	116	130	44.2	74.8
Iron	mg/L 0.005	<0.005	0.006	0.268	0.131	0.119

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Parameter	Units	R.L.	Client I.D.	17-91-II	18-91	19-91	20-91-I	20-91-II
			Sample I.D.	24-013112-11	24-013112-12	24-013112-13	24-013112-14	24-013112-15
			Date Collected	2024-05-06	2024-05-06	2024-05-06	2024-05-06	2024-05-06
				-	-	-	-	-
Magnesium	mg/L	0.02		6.36	13.8	16.1	30.7	42.0
Manganese	mg/L	0.001		<0.001	0.004	0.033	0.070	0.010
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		0.4	1.3	1.8	7.2	4.2
Sodium	mg/L	0.2		4.8	18.7	23.3	49.8	35.2
Strontium	mg/L	0.001		0.251	0.267	0.319	3.03	2.28
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		<0.0001	<0.0001	0.0001	<0.0001	<0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0002	0.0002	0.0012	<0.0001	0.0001
Copper	mg/L	0.0001		0.0003	0.0003	0.0005	<0.0001	0.0002
Lead	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.0001		0.0001	0.0003	0.0003	0.0001	<0.0001
Nickel	mg/L	0.0002		0.0003	0.0003	0.0006	0.0006	0.0023
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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			Client I.D.	17-91-II	18-91	19-91	20-91-I	20-91-II
			Sample I.D.	24-013112-11	24-013112-12	24-013112-13	24-013112-14	24-013112-15
			Date Collected	2024-05-06	2024-05-06	2024-05-06	2024-05-06	2024-05-06
Parameter	Units	R.L.		-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00036	0.00076	0.00073	<0.00005	<0.00005
Vanadium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		7.79	7.73	8.96	7.33	8.75
Cation Sum	meq/L	-		7.67	7.77	8.94	7.48	8.93
% Difference	%	-		0.803	0.239	0.0925	1.05	1.05
Ion Ratio	-	-		1.02	0.995	1.00	0.979	0.979
Sodium Adsorption Ratio	-	-		0.109	0.437	0.514	1.41	0.808
TDS (Ion Sum Calc)	mg/L	1		395	399	465	370	431
TDS(calc.)/EC(actual)	-	-		0.539	0.528	0.548	0.508	0.500
Conductivity Calc	µmho/cm	-		696	731	828	698	818
Conductivity Calc / Conductivity	-	-		0.950	0.967	0.975	0.959	0.947
Langelier Index(25°C)	-	-		0.864	0.846	0.961	0.533	0.834
Saturation pH (25°C)	-	-		6.76	6.92	6.82	7.37	7.07
pH (Client Data)	pH units	-		7.71	7.18	7.22	7.97	7.93
Temperature (Client Data)	°C	-		9.6	9.9	11.4	10.8	9.8

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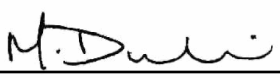
Parameter	Units	R.L.	Client I.D.	20-91-III	21-91-I	21-91-II	12-91-III	23-07
			Sample I.D.	24-013112-16	24-013112-17	24-013112-18	24-013112-19	24-013112-20
			Date Collected	2024-05-06	2024-05-07	2024-05-07	2024-05-07	2024-05-06
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		353	509	434	493	249
TDS (Calc. from Cond.)	mg/L	3		470	1410	857	1110	303
Conductivity @25°C	uS/cm	1		888	2530	1570	2010	585
pH @25°C	pH units	-		7.71	7.65	7.89	7.56	7.86
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.7	<0.1
Chloride	mg/L	0.5		60.2	516	244	340	17.6
Nitrate (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.40	<0.05
Nitrite (N)	mg/L	0.05		<0.05	0.05	<0.05	<0.40	<0.05
Sulphate	mg/L	1		17	2	<1	11	31
Phosphorus (Total)	mg/L	0.01		0.04	0.03	0.11	0.03	1.06
Total Kjeldahl Nitrogen	mg/L	0.1		0.8	3.6	2.8	3.2	0.2
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.48	2.37	1.83	1.29	<0.05
Dissolved Organic Carbon	mg/L	0.2		6.8	10.3	9.5	16.0	3.1
Phenolics	mg/L	0.001		<0.001	<0.001	0.001	<0.001	<0.001
COD	mg/L	5		27	80	61	106	36
Hardness (as CaCO3)	mg/L	0.02		383	879	470	683	282
Aluminum	mg/L	0.01		0.05	0.06	0.04	0.06	0.04
Barium	mg/L	0.001		0.286	1.08	5.44	1.09	0.102
Boron	mg/L	0.005		0.078	0.576	0.554	0.297	0.010
Calcium	mg/L	0.02		113	169	83.6	184	95.0
Iron	mg/L	0.005		1.45	1.02	2.09	10.6	0.012



Michelle Dubien
Data Specialist

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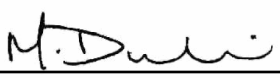
Parameter	Units	R.L.	Client I.D.	20-91-III	21-91-I	21-91-II	12-91-III	23-07
			Sample I.D.	24-013112-16	24-013112-17	24-013112-18	24-013112-19	24-013112-20
			Date Collected	2024-05-06	2024-05-07	2024-05-07	2024-05-07	2024-05-06
				-	-	-	-	-
Magnesium	mg/L	0.02		24.5	111	63.6	54.0	10.8
Manganese	mg/L	0.001		0.053	0.011	0.009	0.045	0.004
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		2.6	12.0	8.8	6.4	1.6
Sodium	mg/L	0.2		32.7	164	154	151	7.5
Strontium	mg/L	0.001		0.522	11.5	7.23	1.51	0.270
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		<0.0001	<0.0001	0.0004	0.0002	0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0002	0.0003	0.0002	0.0004	0.0002
Copper	mg/L	0.0001		<0.0001	<0.0001	0.0008	0.0002	0.0002
Lead	mg/L	0.00002		0.00005	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	0.0008
Nickel	mg/L	0.0002		0.0027	0.0071	0.0047	0.0150	0.0006
Selenium	mg/L	0.001		<0.001	0.007	0.003	0.003	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001



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			Client I.D.	20-91-III	21-91-I	21-91-II	12-91-III	23-07
			Sample I.D.	24-013112-16	24-013112-17	24-013112-18	24-013112-19	24-013112-20
			Date Collected	2024-05-06	2024-05-07	2024-05-07	2024-05-07	2024-05-06
Parameter	Units	R.L.		-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	0.00014
Vanadium	mg/L	0.0001		0.0001	0.0002	0.0002	0.0003	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		9.11	24.9	15.6	19.9	6.12
Cation Sum	meq/L	-		9.23	25.5	16.6	21.1	6.01
% Difference	%	-		0.673	1.16	3.16	2.87	0.931
Ion Ratio	-	-		0.987	0.977	0.939	0.944	1.02
Sodium Adsorption Ratio	-	-		0.727	2.41	3.08	2.52	0.195
TDS (Ion Sum Calc)	mg/L	1		463	1290	817	1060	313
TDS(calc.)/EC(actual)	-	-		0.522	0.510	0.521	0.528	0.535
Conductivity Calc	µmho/cm	-		843	2340	1500	1900	570
Conductivity Calc / Conductivity	-	-		0.949	0.927	0.955	0.943	0.975
Langelier Index(25°C)	-	-		0.848	1.07	0.957	1.01	0.791
Saturation pH (25°C)	-	-		6.86	6.58	6.93	6.55	7.07
pH (Client Data)	pH units	-		7.56	6.67	7.30	6.60	7.96
Temperature (Client Data)	°C	-		10.1	12.7	12.7	13.5	9.4

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			Client I.D.	25-91	25-96	27-93	28-93	29-93
			Sample I.D.	24-013112-21	24-013112-22	24-013112-23	24-013112-24	24-013112-25
			Date Collected	2024-05-06	2024-05-06	2024-05-06	2024-05-06	2024-05-06
Parameter	Units	R.L.		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		352	440	219	293	367
TDS (Calc. from Cond.)	mg/L	3		620	761	263	1570	824
Conductivity @25°C	uS/cm	1		1150	1400	508	2810	1510
pH @25°C	pH units	-		7.66	7.98	7.76	7.93	7.78
Fluoride	mg/L	0.1		<0.1	2.0	<0.1	1.4	<0.1
Chloride	mg/L	0.5		148	177	7.8	717	239
Nitrate (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.40	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.40	<0.05
Sulphate	mg/L	1		12	<1	36	<2	47
Phosphorus (Total)	mg/L	0.01		0.06	0.03	<0.01	0.02	2.54
Total Kjeldahl Nitrogen	mg/L	0.1		0.2	3.3	0.1	4.4	0.2
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		<0.05	3.03	0.14	3.96	0.05
Dissolved Organic Carbon	mg/L	0.2		3.3	2.6	2.8	1.8	3.8
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		15	39	<5	57	35
Hardness (as CaCO3)	mg/L	0.02		381	157	250	486	383
Aluminum	mg/L	0.01		0.08	0.01	0.03	0.03	0.05
Barium	mg/L	0.001		0.105	0.279	0.104	1.36	0.100
Boron	mg/L	0.005		0.015	1.42	0.042	1.06	0.040
Calcium	mg/L	0.02		137	25.0	66.3	78.9	140
Iron	mg/L	0.005		0.209	0.014	0.523	2.78	0.144

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			Client I.D.	25-91	25-96	27-93	28-93	29-93
			Sample I.D.	24-013112-21	24-013112-22	24-013112-23	24-013112-24	24-013112-25
			Date Collected	2024-05-06	2024-05-06	2024-05-06	2024-05-06	2024-05-06
Parameter	Units	R.L.		-	-	-	-	-
Magnesium	mg/L	0.02		9.22	23.0	20.5	70.2	8.35
Manganese	mg/L	0.001		0.019	0.004	0.010	0.057	0.280
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		2.4	12.2	2.2	17.0	1.8
Sodium	mg/L	0.2		90.2	247	5.6	329	154
Strontium	mg/L	0.001		0.398	3.53	0.544	11.7	0.538
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0004	0.0001	<0.0001	0.0019	0.0003
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	0.000021	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0004	<0.0001	0.0001	0.0002	0.0008
Copper	mg/L	0.0001		0.0004	0.0003	0.0002	0.0002	0.0003
Lead	mg/L	0.00002		0.00021	<0.00002	<0.00002	0.00002	<0.00002
Molybdenum	mg/L	0.0001		0.0004	0.0003	0.0002	0.0005	0.0003
Nickel	mg/L	0.0002		0.0007	0.0004	<0.0002	<0.0002	0.0010
Selenium	mg/L	0.001		<0.001	0.004	<0.001	0.015	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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			Client I.D.	25-91	25-96	27-93	28-93	29-93
			Sample I.D.	24-013112-21	24-013112-22	24-013112-23	24-013112-24	24-013112-25
			Date Collected	2024-05-06	2024-05-06	2024-05-06	2024-05-06	2024-05-06
Parameter	Units	R.L.		-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00048	<0.00005	<0.00005	<0.00005	0.00046
Vanadium	mg/L	0.0001		0.0002	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		11.4	13.9	5.36	26.2	15.0
Cation Sum	meq/L	-		11.6	14.3	5.34	24.9	14.4
% Difference	%	-		0.738	1.37	0.214	2.49	2.02
Ion Ratio	-	-		0.985	0.973	1.00	1.05	1.04
Sodium Adsorption Ratio	-	-		2.01	8.58	0.154	6.50	3.44
TDS (Ion Sum Calc)	mg/L	1		610	750	271	1390	810
TDS(calc.)/EC(actual)	-	-		0.529	0.536	0.533	0.496	0.536
Conductivity Calc	µmho/cm	-		1110	1320	498	2550	1430
Conductivity Calc / Conductivity	-	-		0.961	0.943	0.980	0.909	0.945
Langelier Index(25°C)	-	-		0.871	0.539	0.480	0.782	0.997
Saturation pH (25°C)	-	-		6.79	7.44	7.28	7.15	6.78
pH (Client Data)	pH units	-		7.69	8.20	7.20	7.11	7.33
Temperature (Client Data)	°C	-		10.2	11.8	11.0	11.1	8.7

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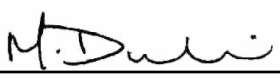
Parameter	Units	R.L.	Client I.D.	30-93	31-93	35-93-I	35-93-II	36-93
			Sample I.D.	24-013112-26	24-013112-27	24-013112-28	24-013112-29	24-013112-30
			Date Collected	2024-05-08	2024-05-08	2024-05-06	2024-05-06	2024-05-06
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		450	438	180	313	242
TDS (Calc. from Cond.)	mg/L	3		775	764	240	509	335
Conductivity @25°C	uS/cm	1		1420	1410	464	956	645
pH @25°C	pH units	-		7.48	7.49	7.86	7.79	7.84
Fluoride	mg/L	0.1		<0.1	<0.1	0.3	<0.1	<0.1
Chloride	mg/L	0.5		178	177	22.1	104	31.2
Nitrate (N)	mg/L	0.05		<0.05	0.21	0.07	0.14	0.37
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		14	12	25	19	46
Phosphorus (Total)	mg/L	0.01		0.04	0.26	0.02	1.23	0.15
Total Kjeldahl Nitrogen	mg/L	0.1		7.1	6.3	0.1	0.6	0.2
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		6.67	6.50	0.10	0.05	0.21
Dissolved Organic Carbon	mg/L	0.2		5.9	6.0	3.1	3.8	3.5
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		24	37	<5	36	12
Hardness (as CaCO3)	mg/L	0.02		470	468	225	339	329
Aluminum	mg/L	0.01		0.06	0.05	0.02	0.06	0.06
Barium	mg/L	0.001		0.481	0.498	0.207	0.099	0.301
Boron	mg/L	0.005		0.097	0.086	0.114	0.017	0.046
Calcium	mg/L	0.02		131	132	42.7	117	88.9
Iron	mg/L	0.005		8.75	10.4	0.013	0.030	2.11



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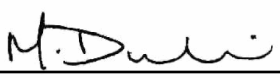
Parameter	Units	R.L.	Client I.D.	30-93	31-93	35-93-I	35-93-II	36-93
			Sample I.D.	24-013112-26	24-013112-27	24-013112-28	24-013112-29	24-013112-30
			Date Collected	2024-05-08	2024-05-08	2024-05-06	2024-05-06	2024-05-06
				-	-	-	-	-
Magnesium	mg/L	0.02		34.6	33.5	28.8	11.5	26.0
Manganese	mg/L	0.001		0.240	0.361	0.003	0.001	0.041
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		3.5	3.8	3.4	1.4	1.8
Sodium	mg/L	0.2		106	102	7.3	65.8	9.4
Strontium	mg/L	0.001		0.555	0.523	1.05	0.389	0.823
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0049	0.0028	0.0003	<0.0001	0.0002
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0028	0.0017	0.0001	0.0002	0.0002
Copper	mg/L	0.0001		0.0002	<0.0001	0.0002	0.0006	0.0003
Lead	mg/L	0.00002		0.00003	<0.00002	<0.00002	0.00009	0.00021
Molybdenum	mg/L	0.0001		0.0004	0.0003	0.0005	0.0002	0.0002
Nickel	mg/L	0.0002		0.0059	0.0044	0.0003	0.0002	<0.0002
Selenium	mg/L	0.001		0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001



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			Client I.D.	30-93	31-93	35-93-I	35-93-II	36-93
			Sample I.D.	24-013112-26	24-013112-27	24-013112-28	24-013112-29	24-013112-30
			Date Collected	2024-05-08	2024-05-08	2024-05-06	2024-05-06	2024-05-06
Parameter	Units	R.L.		-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00016	0.00010	0.00008	0.00040	<0.00005
Vanadium	mg/L	0.0001		<0.0001	<0.0001	0.0001	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		14.3	14.0	4.75	9.58	6.70
Cation Sum	meq/L	-		14.6	14.4	4.93	9.67	7.17
% Difference	%	-		1.00	1.53	1.86	0.471	3.39
Ion Ratio	-	-		0.980	0.970	0.963	0.991	0.934
Sodium Adsorption Ratio	-	-		2.14	2.05	0.213	1.55	0.226
TDS (Ion Sum Calc)	mg/L	1		747	735	238	506	352
TDS(calc.)/EC(actual)	-	-		0.524	0.522	0.512	0.529	0.546
Conductivity Calc	µmho/cm	-		1320	1300	461	923	648
Conductivity Calc / Conductivity	-	-		0.926	0.923	0.993	0.966	1.00
Langelier Index(25°C)	-	-		0.768	0.769	0.313	0.890	0.719
Saturation pH (25°C)	-	-		6.71	6.72	7.55	6.90	7.12
pH (Client Data)	pH units	-		6.85	7.62	8.11	7.96	7.46
Temperature (Client Data)	°C	-		10.4	9.0	10.3	8.3	9.9

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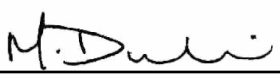
Parameter	Units	R.L.	Client I.D.	37-93-I	37-93-II	38-93	39-93-I	39-93-II
			Sample I.D.	24-013112-31	24-013112-32	24-013112-33	24-013112-34	24-013112-35
			Date Collected	2024-05-06	2024-05-06	2024-05-06	2024-05-06	2024-05-06
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		253	314	300	256	350
TDS (Calc. from Cond.)	mg/L	3		640	902	348	560	693
Conductivity @25°C	uS/cm	1		1190	1650	671	1050	1280
pH @25°C	pH units	-		7.79	7.67	7.79	7.81	7.78
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		190	306	13.0	157	182
Nitrate (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		51	49	33	39	19
Phosphorus (Total)	mg/L	0.01		0.03	2.88	0.21	0.01	0.40
Total Kjeldahl Nitrogen	mg/L	0.1		0.3	<1.0	0.1	0.7	0.7
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.29	0.16	0.06	0.77	0.19
Dissolved Organic Carbon	mg/L	0.2		2.4	2.6	3.7	2.9	4.3
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		9	114	24	9	49
Hardness (as CaCO3)	mg/L	0.02		471	528	339	444	304
Aluminum	mg/L	0.01		0.04	0.07	0.05	0.03	0.04
Barium	mg/L	0.001		0.329	0.365	0.164	0.317	0.098
Boron	mg/L	0.005		0.048	0.031	0.022	0.071	0.028
Calcium	mg/L	0.02		113	172	108	94.3	108
Iron	mg/L	0.005		1.12	1.89	0.061	1.48	0.051



Michelle Dubien
Data Specialist

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Parameter	Units	R.L.	Client I.D.	37-93-I	37-93-II	38-93	39-93-I	39-93-II
			Sample I.D.	24-013112-31	24-013112-32	24-013112-33	24-013112-34	24-013112-35
			Date Collected	2024-05-06	2024-05-06	2024-05-06	2024-05-06	2024-05-06
				-	-	-	-	-
Magnesium	mg/L	0.02		46.2	23.9	17.1	50.5	8.31
Manganese	mg/L	0.001		0.020	0.135	0.096	0.020	0.024
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		3.1	2.0	1.0	3.0	4.9
Sodium	mg/L	0.2		50.8	121	8.2	31.2	138
Strontium	mg/L	0.001		1.40	0.714	0.454	1.51	0.337
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	0.022
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0002	0.0004	<0.0001	<0.0001	0.0002
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0002	0.0006	0.0003	0.0003	0.0003
Copper	mg/L	0.0001		0.0002	0.0002	0.0006	0.0001	0.0004
Lead	mg/L	0.00002		<0.00002	0.00005	0.00003	<0.00002	0.00003
Molybdenum	mg/L	0.0001		0.0002	0.0002	0.0002	0.0002	0.0001
Nickel	mg/L	0.0002		<0.0002	0.0007	0.0002	<0.0002	0.0004
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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			Client I.D.	37-93-I	37-93-II	38-93	39-93-I	39-93-II
			Sample I.D.	24-013112-31	24-013112-32	24-013112-33	24-013112-34	24-013112-35
			Date Collected	2024-05-06	2024-05-06	2024-05-06	2024-05-06	2024-05-06
Parameter	**Units**	**R.L.**		-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		<0.00005	0.00024	0.00013	<0.00005	0.00041
Vanadium	mg/L	0.0001		<0.0001	0.0001	<0.0001	<0.0001	0.0002
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		11.5	16.3	7.06	10.3	12.5
Cation Sum	meq/L	-		11.8	16.0	7.17	10.4	12.2
% Difference	%	-		1.41	1.18	0.791	0.312	1.34
Ion Ratio	-	-		0.972	1.02	0.984	0.994	1.03
Sodium Adsorption Ratio	-	-		1.02	2.28	0.195	0.645	3.45
TDS (Ion Sum Calc)	mg/L	1		606	878	361	530	670
TDS(calc.)/EC(actual)	-	-		0.510	0.533	0.537	0.507	0.524
Conductivity Calc	µmho/cm	-		1140	1590	652	1010	1200
Conductivity Calc / Conductivity	-	-		0.961	0.963	0.971	0.968	0.938
Langelier Index(25°C)	-	-		0.771	0.909	0.847	0.730	0.874
Saturation pH (25°C)	-	-		7.02	6.76	6.94	7.08	6.91
pH (Client Data)	pH units	-		7.63	7.49	7.57	7.35	7.89
Temperature (Client Data)	°C	-		9.5	8.4	10.3	10.8	8.4

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	Client I.D.	45-95-I	45-95-II	46-95-I	46-95-II	47-96-I
	Sample I.D.	24-013112-36	24-013112-37	24-013112-38	24-013112-39	24-013112-40
	Date Collected	2024-05-08	2024-05-08	2024-05-08	2024-05-08	2024-05-08
Parameter	Units R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L 5	332	279	604	605	403
TDS (Calc. from Cond.)	mg/L 3	645	332	1010	1010	676
Conductivity @25°C	uS/cm 1	1200	639	1830	1840	1250
pH @25°C	pH units -	7.73	7.77	7.41	7.45	7.67
Fluoride	mg/L 0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L 0.5	109	26.4	221	221	148
Nitrate (N)	mg/L 0.05	<0.05	0.94	<0.05	<0.05	<0.05
Nitrite (N)	mg/L 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L 1	126	6	<1	<1	18
Phosphorus (Total)	mg/L 0.01	0.07	0.59	0.03	0.01	0.03
Total Kjeldahl Nitrogen	mg/L 0.1	1.2	0.7	29.9	32.8	1.2
Ammonia (N)-Total (NH3+NH4)	mg/L 0.05	0.81	0.07	26.8	32.0	0.95
Dissolved Organic Carbon	mg/L 0.2	5.4	4.0	8.6	8.7	5.5
Phenolics	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L 5	27	60	37	42	23
Hardness (as CaCO3)	mg/L 0.02	455	260	561	550	461
Aluminum	mg/L 0.01	0.05	0.03	0.06	0.05	0.04
Barium	mg/L 0.001	0.049	0.024	1.31	1.32	0.545
Boron	mg/L 0.005	0.117	0.018	0.108	0.106	0.087
Calcium	mg/L 0.02	134	93.3	163	159	122
Iron	mg/L 0.005	2.51	0.006	13.9	14.4	1.71

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Parameter	Units	R.L.	Client I.D.	45-95-I	45-95-II	46-95-I	46-95-II	47-96-I
			Sample I.D.	24-013112-36	24-013112-37	24-013112-38	24-013112-39	24-013112-40
			Date Collected	2024-05-08	2024-05-08	2024-05-08	2024-05-08	2024-05-08
				-	-	-	-	-
Magnesium	mg/L	0.02		28.9	6.59	37.2	36.8	38.1
Manganese	mg/L	0.001		0.081	0.003	0.087	0.088	0.076
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		2.6	3.1	9.2	9.7	2.6
Sodium	mg/L	0.2		75.6	23.3	131	130	78.6
Strontium	mg/L	0.001		0.451	0.250	0.765	0.751	0.680
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0003	<0.0001	0.0001	0.0001	<0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0004	0.0002	0.0008	0.0009	0.0003
Copper	mg/L	0.0001		0.0011	0.0011	0.0010	0.0011	0.0002
Lead	mg/L	0.00002		0.00009	<0.00002	0.00005	0.00004	0.00002
Molybdenum	mg/L	0.0001		0.0001	0.0001	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.0002		0.0023	0.0004	0.0025	0.0024	0.0027
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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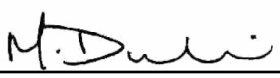
Parameter	Units	R.L.	Client I.D.	45-95-I	45-95-II	46-95-I	46-95-II	47-96-I
			Sample I.D.	24-013112-36	24-013112-37	24-013112-38	24-013112-39	24-013112-40
			Date Collected	2024-05-08	2024-05-08	2024-05-08	2024-05-08	2024-05-08
				-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00009	0.00027	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	0.0001		<0.0001	<0.0001	0.0004	0.0003	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		12.3	6.52	18.3	18.3	12.6
Cation Sum	meq/L	-		12.6	6.30	17.9	17.7	12.8
% Difference	%	-		1.12	1.74	1.11	1.89	0.787
Ion Ratio	-	-		0.978	1.04	1.02	1.04	0.984
Sodium Adsorption Ratio	-	-		1.54	0.628	2.40	2.40	1.59
TDS (Ion Sum Calc)	mg/L	1		678	331	938	935	651
TDS(calc.)/EC(actual)	-	-		0.567	0.517	0.512	0.507	0.520
Conductivity Calc	µmho/cm	-		1150	599	1600	1590	1180
Conductivity Calc / Conductivity	-	-		0.964	0.938	0.875	0.865	0.944
Langelier Index(25°C)	-	-		0.898	0.743	0.902	0.931	0.888
Saturation pH (25°C)	-	-		6.83	7.03	6.51	6.52	6.78
pH (Client Data)	pH units	-		7.26	8.02	7.44	6.79	7.60
Temperature (Client Data)	°C	-		9.0	8.4	10.4	11.7	11.3



Michelle Dubien
Data Specialist

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	Client I.D.	47-96-II	48-96-I	48-96-II	49-96-I	49-96-II
	Sample I.D.	24-013112-41	24-013112-42	24-013112-43	24-013112-44	24-013112-45
	Date Collected	2024-05-08	2024-05-08	2024-05-08	2024-05-07	2024-05-07
Parameter	Units R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L 5	404	292	441	277	280
TDS (Calc. from Cond.)	mg/L 3	886	412	646	511	551
Conductivity @25°C	uS/cm 1	1620	786	1200	960	1030
pH @25°C	pH units -	7.93	8.01	7.62	8.12	7.84
Fluoride	mg/L 0.1	<0.1	0.3	<0.1	0.6	<0.1
Chloride	mg/L 0.5	251	65.0	119	115	125
Nitrate (N)	mg/L 0.05	<0.05	0.16	<0.05	0.15	<0.05
Nitrite (N)	mg/L 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L 1	2	18	6	29	65
Phosphorus (Total)	mg/L 0.01	3.51	0.01	2.34	0.01	0.04
Total Kjeldahl Nitrogen	mg/L 0.1	38.6	0.7	1.3	4.0	<0.1
Ammonia (N)-Total (NH3+NH4)	mg/L 0.05	34.3	0.30	1.21	2.46	0.08
Dissolved Organic Carbon	mg/L 0.2	4.9	3.0	6.6	2.1	2.6
Phenolics	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L 5	93	22	74	<5	14
Hardness (as CaCO3)	mg/L 0.02	405	329	572	147	436
Aluminum	mg/L 0.01	0.18	0.04	0.11	<0.01	0.04
Barium	mg/L 0.001	0.152	1.22	0.872	0.028	0.143
Boron	mg/L 0.005	0.108	0.135	0.072	0.467	0.758
Calcium	mg/L 0.02	126	68.0	162	26.6	115
Iron	mg/L 0.005	13.0	0.034	3.82	0.007	0.040

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Parameter	Units	R.L.	Client I.D.	47-96-II	48-96-I	48-96-II	49-96-I	49-96-II
			Sample I.D.	24-013112-41	24-013112-42	24-013112-43	24-013112-44	24-013112-45
			Date Collected	2024-05-08	2024-05-08	2024-05-08	2024-05-07	2024-05-07
				-	-	-	-	-
Magnesium	mg/L	0.02		21.5	38.7	40.7	19.5	36.3
Manganese	mg/L	0.001		0.267	<0.001	0.085	0.001	0.006
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		10.8	3.6	3.1	8.6	2.5
Sodium	mg/L	0.2		154	35.2	52.1	146	36.0
Strontium	mg/L	0.001		0.445	1.30	0.975	1.97	0.849
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		0.006	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		0.0003	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0009	0.0002	0.0001	<0.0001	<0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0008	0.0001	0.0003	<0.0001	0.0002
Copper	mg/L	0.0001		0.0009	0.0005	0.0004	0.0001	0.0004
Lead	mg/L	0.00002		<0.00002	0.00008	0.00026	0.00004	<0.00002
Molybdenum	mg/L	0.0001		0.0016	0.0002	<0.0001	<0.0001	0.0010
Nickel	mg/L	0.0002		0.0035	0.0015	0.0025	<0.0002	0.0003
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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			Client I.D.	47-96-II	48-96-I	48-96-II	49-96-I	49-96-II
			Sample I.D.	24-013112-41	24-013112-42	24-013112-43	24-013112-44	24-013112-45
			Date Collected	2024-05-08	2024-05-08	2024-05-08	2024-05-07	2024-05-07
Parameter	**Units**	**R.L.**		-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00023	0.00011	<0.00005	<0.00005	0.00008
Vanadium	mg/L	0.0001		<0.0001	0.0003	0.0003	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		15.2	8.07	12.3	9.42	10.5
Cation Sum	meq/L	-		15.8	8.23	14.0	9.57	10.4
% Difference	%	-		1.95	0.994	6.53	0.794	0.582
Ion Ratio	-	-		0.962	0.980	0.877	0.984	1.01
Sodium Adsorption Ratio	-	-		3.34	0.845	0.948	5.26	0.750
TDS (Ion Sum Calc)	mg/L	1		822	405	651	513	547
TDS(calc.)/EC(actual)	-	-		0.507	0.515	0.543	0.534	0.531
Conductivity Calc	µmho/cm	-		1460	762	1190	918	1000
Conductivity Calc / Conductivity	-	-		0.899	0.969	0.996	0.956	0.974
Langelier Index(25°C)	-	-		1.15	0.845	1.00	0.525	0.874
Saturation pH (25°C)	-	-		6.78	7.16	6.62	7.60	6.97
pH (Client Data)	pH units	-		7.25	8.30	7.33	8.30	8.07
Temperature (Client Data)	°C	-		10.1	9.5	11.2	8.4	9.4

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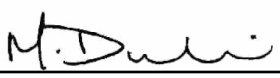
Parameter	Units	R.L.	Client I.D.	49-96-III	59-05	60-05	Dup	Dup-4
			Sample I.D.	24-013112-46	24-013112-47	24-013112-48	24-013112-49	24-013112-50
			Date Collected	2024-05-07	2024-05-08	2024-05-08	2024-05-06	2024-05-06
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		317	598	300	331	215
TDS (Calc. from Cond.)	mg/L	3		524	986	538	904	264
Conductivity @25°C	uS/cm	1		983	1800	1010	1650	510
pH @25°C	pH units	-		7.81	7.60	7.91	7.66	7.94
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		99.6	210	129	296	7.8
Nitrate (N)	mg/L	0.05		0.07	<0.05	<0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		39	<1	19	43	36
Phosphorus (Total)	mg/L	0.01		0.10	0.01	0.18	3.82	<0.01
Total Kjeldahl Nitrogen	mg/L	0.1		<0.1	21.3	0.4	1.3	<0.1
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		<0.05	21.0	0.07	0.13	0.09
Dissolved Organic Carbon	mg/L	0.2		3.3	8.6	2.8	2.1	2.0
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		32	38	41	171	13
Hardness (as CaCO3)	mg/L	0.02		394	568	402	533	255
Aluminum	mg/L	0.01		0.05	0.05	0.05	0.06	0.03
Barium	mg/L	0.001		0.089	1.45	0.235	0.368	0.106
Boron	mg/L	0.005		0.077	0.102	0.020	0.031	0.040
Calcium	mg/L	0.02		136	165	97.5	174	68.4
Iron	mg/L	0.005		0.006	12.9	0.124	1.90	0.543



Michelle Dubien
Data Specialist

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	Client I.D.	49-96-III	59-05	60-05	Dup	Dup-4
	Sample I.D.	24-013112-46	24-013112-47	24-013112-48	24-013112-49	24-013112-50
	Date Collected	2024-05-07	2024-05-08	2024-05-08	2024-05-06	2024-05-06
Parameter	Units R.L.	-	-	-	-	-
Magnesium	mg/L 0.02	13.0	37.9	38.5	23.9	20.5
Manganese	mg/L 0.001	<0.001	0.078	0.011	0.137	0.010
Phosphorus	mg/L 0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L 0.1	1.0	8.4	2.9	2.1	2.2
Sodium	mg/L 0.2	43.4	124	41.7	120	5.6
Strontium	mg/L 0.001	0.462	0.777	0.551	0.710	0.540
Tin	mg/L 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L 0.0001	0.0001	<0.0001	<0.0001	0.0004	<0.0001
Beryllium	mg/L 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L 0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L 0.0001	0.0003	0.0008	0.0005	0.0006	0.0001
Copper	mg/L 0.0001	0.0011	0.0002	0.0014	0.0002	0.0002
Lead	mg/L 0.00002	0.00004	<0.00002	0.00008	0.00004	<0.00002
Molybdenum	mg/L 0.0001	0.0004	<0.0001	<0.0001	0.0002	0.0002
Nickel	mg/L 0.0002	0.0005	0.0023	0.0009	0.0007	<0.0002
Selenium	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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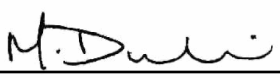
Parameter	Units	R.L.	Client I.D.	49-96-III	59-05	60-05	Dup	Dup-4
			Sample I.D.	24-013112-46	24-013112-47	24-013112-48	24-013112-49	24-013112-50
			Date Collected	2024-05-07	2024-05-08	2024-05-08	2024-05-06	2024-05-06
				-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00061	<0.00005	<0.00005	0.00024	<0.00005
Vanadium	mg/L	0.0001		<0.0001	0.0005	<0.0001	0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		9.96	17.9	10.0	16.2	5.28
Cation Sum	meq/L	-		9.80	17.7	9.94	16.1	5.44
% Difference	%	-		0.842	0.670	0.461	0.557	1.50
Ion Ratio	-	-		1.02	1.01	1.01	1.01	0.970
Sodium Adsorption Ratio	-	-		0.950	2.26	0.904	2.27	0.151
TDS (Ion Sum Calc)	mg/L	1		523	917	509	873	271
TDS(calc.)/EC(actual)	-	-		0.532	0.511	0.506	0.529	0.530
Conductivity Calc	µmho/cm	-		945	1570	962	1580	500
Conductivity Calc / Conductivity	-	-		0.961	0.877	0.956	0.956	0.981
Langelier Index(25°C)	-	-		0.983	1.09	0.914	0.927	0.666
Saturation pH (25°C)	-	-		6.83	6.51	7.00	6.73	7.27
pH (Client Data)	pH units	-		7.73	6.78	7.81	7.49	7.20
Temperature (Client Data)	°C	-		8.7	11.3	8.6	8.4	11.0



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Data Specialist

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			Client I.D.	Dup-5	Dup-6
			Sample I.D.	24-013112-51	24-013112-52
			Date Collected	2024-05-06	2024-05-06
Parameter	Units	R.L.		-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		240	289
TDS (Calc. from Cond.)	mg/L	3		295	378
Conductivity @25°C	uS/cm	1		569	726
pH @25°C	pH units	-		7.84	7.80
Fluoride	mg/L	0.1		<0.1	<0.1
Chloride	mg/L	0.5		16.6	32.3
Nitrate (N)	mg/L	0.05		<0.05	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05
Sulphate	mg/L	1		31	43
Phosphorus (Total)	mg/L	0.01		1.23	0.09
Total Kjeldahl Nitrogen	mg/L	0.1		<0.1	<0.1
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		<0.05	<0.05
Dissolved Organic Carbon	mg/L	0.2		1.4	2.4
Phenolics	mg/L	0.001		<0.001	<0.001
COD	mg/L	5		58	15
Hardness (as CaCO3)	mg/L	0.02		292	329
Aluminum	mg/L	0.01		0.03	0.04
Barium	mg/L	0.001		0.105	0.072
Boron	mg/L	0.005		0.011	0.013
Calcium	mg/L	0.02		98.5	110
Iron	mg/L	0.005		<0.005	0.272

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			Client I.D.	Dup-5	Dup-6
			Sample I.D.	24-013112-51	24-013112-52
			Date Collected	2024-05-06	2024-05-06
Parameter	Units	R.L.		-	-
Magnesium	mg/L	0.02		11.0	12.8
Manganese	mg/L	0.001		0.005	0.013
Phosphorus	mg/L	0.1		<0.1	<0.1
Potassium	mg/L	0.1		1.6	0.9
Sodium	mg/L	0.2		7.6	21.0
Strontium	mg/L	0.001		0.274	0.270
Tin	mg/L	0.05		<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0001	<0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001
Cobalt	mg/L	0.0001		0.0002	0.0002
Copper	mg/L	0.0001		0.0001	<0.0001
Lead	mg/L	0.00002		<0.00002	<0.00002
Molybdenum	mg/L	0.0001		0.0008	0.0005
Nickel	mg/L	0.0002		0.0006	<0.0002
Selenium	mg/L	0.001		<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001

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			Client I.D.	Dup-5	Dup-6
			Sample I.D.	24-013112-51	24-013112-52
			Date Collected	2024-05-06	2024-05-06
Parameter	Units	R.L.		-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00014	0.00040
Vanadium	mg/L	0.0001		<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002
Anion Sum	meq/L	-		5.91	7.58
Cation Sum	meq/L	-		6.20	7.52
% Difference	%	-		2.39	0.376
Ion Ratio	-	-		0.953	1.01
Sodium Adsorption Ratio	-	-		0.193	0.505
TDS (Ion Sum Calc)	mg/L	1		310	394
TDS(calc.)/EC(actual)	-	-		0.545	0.543
Conductivity Calc	µmho/cm	-		571	705
Conductivity Calc / Conductivity	-	-		1.00	0.971
Langelier Index(25°C)	-	-		0.771	0.851
Saturation pH (25°C)	-	-		7.07	6.95
pH (Client Data)	pH units	-		7.96	7.78
Temperature (Client Data)	°C	-		9.4	10.4

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Parameter	Units	R.L.	Client I.D.	12-91-I	12-91-II	13-91-I	13-91-II	14-07
			Sample I.D.	24-013112-1	24-013112-2	24-013112-3	24-013112-4	24-013112-5
			Date Collected	2024-05-07	2024-05-07	2024-05-06	2024-05-06	2024-05-06
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	R.L.	Client I.D.	15-91-I	15-91-II	16-91-I	16-91-II	17-91-I
			Sample I.D.	24-013112-6	24-013112-7	24-013112-8	24-013112-9	24-013112-10
			Date Collected	2024-05-06	2024-05-06	2024-05-07	2024-05-07	2024-05-06
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	0.6	0.7	2.1	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

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Parameter	Units	R.L.	Client I.D.	17-91-II	18-91	19-91	20-91-I	20-91-II
			Sample I.D.	24-013112-11	24-013112-12	24-013112-13	24-013112-14	24-013112-15
			Date Collected	2024-05-06	2024-05-06	2024-05-06	2024-05-06	2024-05-06
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	R.L.	Client I.D.	20-91-III	21-91-I	21-91-II	12-91-III	23-07
			Sample I.D.	24-013112-16	24-013112-17	24-013112-18	24-013112-19	24-013112-20
			Date Collected	2024-05-06	2024-05-07	2024-05-07	2024-05-07	2024-05-06
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	1.0	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	1.3	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	1.2	<0.5	<0.5

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Parameter	Units	R.L.	Client I.D.	25-91	25-96	27-93	28-93	29-93
			Sample I.D.	24-013112-21	24-013112-22	24-013112-23	24-013112-24	24-013112-25
			Date Collected	2024-05-06	2024-05-06	2024-05-06	2024-05-06	2024-05-06
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	R.L.	Client I.D.	30-93	31-93	35-93-I	35-93-II	36-93
			Sample I.D.	24-013112-26	24-013112-27	24-013112-28	24-013112-29	24-013112-30
			Date Collected	2024-05-08	2024-05-08	2024-05-06	2024-05-06	2024-05-06
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

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Parameter	Units	R.L.	Client I.D.	37-93-I	37-93-II	38-93	39-93-I	39-93-II
			Sample I.D.	24-013112-31	24-013112-32	24-013112-33	24-013112-34	24-013112-35
			Date Collected	2024-05-06	2024-05-06	2024-05-06	2024-05-06	2024-05-06
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	R.L.	Client I.D.	45-95-I	45-95-II	46-95-I	46-95-II	47-96-I
			Sample I.D.	24-013112-36	24-013112-37	24-013112-38	24-013112-39	24-013112-40
			Date Collected	2024-05-08	2024-05-08	2024-05-08	2024-05-08	2024-05-08
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

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			Client I.D.	47-96-II	48-96-I	48-96-II	49-96-I	49-96-II
			Sample I.D.	24-013112-41	24-013112-42	24-013112-43	24-013112-44	24-013112-45
			Date Collected	2024-05-08	2024-05-08	2024-05-08	2024-05-07	2024-05-07
Parameter	**Units**	**R.L.**		-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

			Client I.D.	49-96-III	59-05	60-05	Dup	Dup-4
			Sample I.D.	24-013112-46	24-013112-47	24-013112-48	24-013112-49	24-013112-50
			Date Collected	2024-05-07	2024-05-08	2024-05-08	2024-05-06	2024-05-06
Parameter	**Units**	**R.L.**		-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

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Data Specialist

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			Client I.D.	Dup-5	Dup-6
			Sample I.D.	24-013112-51	24-013112-52
			Date Collected	2024-05-06	2024-05-06
Parameter	Units	R.L.		-	-
Benzene	µg/L	0.5		<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5

Elevated RLs due to sample matrix interferences
TKN and ammonia are within acceptable analytical limits

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-013311 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
112 Commerce Park Dr Unit L
Barrie, ON L4N 8W8

Attention: Kayla Pantaleo

DATE RECEIVED: 2024-May-08
DATE REPORTED: 2024-May-28
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Lindsay OPS GW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	26	OTTAWA	PCURIEL	2024-May-15	A-IC-01	SM 4110B
BOD5 (Liquid)	26	KINGSTON	JWOLFE2	2024-May-15	BOD-001	SM 5210B
COD (Liquid)	26	KINGSTON	EHINCH	2024-May-21	COD-001	SM 5220D
Colour (Liquid)	26	OTTAWA	STAILLON	2024-May-14	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	26	OTTAWA	SBOUDREAU	2024-May-16	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	26	KINGSTON	JMACINNES	2024-May-16	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	26	OTTAWA	VKASYAN	2024-May-14	C-OC-01	EPA 415.2
Ion Balance (Calc.)	26	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	26	OTTAWA	STAILLON	2024-May-17	D-CRVI-01	MECP E3056
ICP/MS (Liquid)	26	OTTAWA	AOZKAYMAK	2024-May-16	D-ICPMS-01	EPA 200.8
ICP/OES (Liquid)	26	OTTAWA	APRUDYVUS	2024-May-14	D-ICP-01	SM 3120B
Mercury (Liquid)	26	OTTAWA	TBENNETT	2024-May-15	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	26	KINGSTON	JYEARWOOD	2024-May-21	NH3-001	SM 4500NH3
Phenols (Liquid)	26	KINGSTON	JMACINNES	2024-May-22	PHEN-01	MECP E3179
TP & TKN (Liquid)	26	KINGSTON	KDIBBITS	2024-May-16	TPTKN-001	MECP E3516.2
TSS (Liquid)	26	KINGSTON	DCASSIDY	2024-May-17	TSS-001	SM 2540D
Turbidity (Liquid)	26	OTTAWA	PLUSSIER	2024-May-14	A-TURB-01	SM 2130B
VOC-Volatiles Full (Water)	26	RICHMOND_HILL	FLENA	2024-May-18	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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Parameter	Units	R.L.	Client I.D.	6-90-II	7-90	7-90-II	11-90	32-93-I
			Sample I.D.	24-013311-1	24-013311-2	24-013311-3	24-013311-4	24-013311-5
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		2780	5850	6680	381	268
TDS (Calc. from Cond.)	mg/L	3		4980	7040	10000	586	495
Conductivity @25°C	uS/cm	1		8680	12200	17000	1090	932
pH @25°C	pH units	-		7.79	8.01	8.02	7.74	7.95
Colour	TCU	2		227	810	862	<2	<2
Turbidity	NTU	0.1		3690	7820	125	19.0	24.3
Fluoride	mg/L	0.1		<0.7	<0.7	<1.8	<0.1	<0.1
Chloride	mg/L	0.5		818	1020	2120	104	109
Nitrate (N)	mg/L	0.05		<0.40	<0.40	<1.00	<0.05	0.06
Nitrite (N)	mg/L	0.05		<0.40	<0.40	1.14	<0.05	<0.05
Sulphate	mg/L	1		21	19	21	33	45
BOD5	mg/L	3		16	40	19	<3	<3
Total Suspended Solids	mg/L	3		2100	15500	400	6	44
Phosphorus (Total)	mg/L	0.01		2.93	7.68	0.42	0.02	0.02
Total Kjeldahl Nitrogen	mg/L	0.1		566	575	1130	0.9	0.2
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		568	591	1500	0.84	0.27
Ammonia (N)-unionized	mg/L	0.01		0.89	1.47	7.05	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		176	223	536	7.0	3.1
Cyanide (WAD)	mg/L	0.005		<0.008 (El)	<0.085 (El)	<0.017 (El)	<0.005	<0.005
Phenolics	mg/L	0.001		0.025	0.024	0.060	<0.001	<0.001
COD	mg/L	5		1090	1210	1930	19	18

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			Client I.D.	6-90-II	7-90	7-90-II	11-90	32-93-I
			Sample I.D.	24-013311-1	24-013311-2	24-013311-3	24-013311-4	24-013311-5
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
Parameter	**Units**	**R.L.**		-	-	-	-	-
Hardness (as CaCO3)	mg/L	0.02		1260	1100	1180	467	419
Aluminum	mg/L	0.01		0.06	0.09	0.09	0.04	0.05
Barium	mg/L	0.001		1.71	0.337	0.273	0.316	0.087
Boron	mg/L	0.005		6.83	4.08	20.3	0.100	0.046
Calcium	mg/L	0.02		150	113	102	121	111
Iron	mg/L	0.005		1.11	1.85	3.86	3.32	0.008
Magnesium	mg/L	0.02		217	198	224	40.2	34.2
Manganese	mg/L	0.001		0.198	0.149	0.243	0.091	0.017
Phosphorus	mg/L	0.1		0.1	0.5	3.0	<0.1	<0.1
Potassium	mg/L	0.1		286	338	592	4.1	2.7
Sodium	mg/L	0.2		778	1880	1820	39.9	19.2
Strontium	mg/L	0.001		1.54	0.783	1.37	1.32	0.860
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	0.036	0.056	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	0.019	0.016	<0.005	<0.005
Antimony	mg/L	0.0001		0.0012	0.0024	0.0048	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0029	0.0062	0.0358	0.0001	0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000030	<0.000059	0.000080	<0.000015	<0.000015
Chromium	mg/L	0.001		0.008	0.032	0.053	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0128	0.0161	0.0296	0.0002	0.0003

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			Client I.D.	6-90-II	7-90	7-90-II	11-90	32-93-I
			Sample I.D.	24-013311-1	24-013311-2	24-013311-3	24-013311-4	24-013311-5
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
Parameter	**Units**	**R.L.**		-	-	-	-	-
Copper	mg/L	0.0001		0.0002	0.0023	0.0013	<0.0001	0.0001
Lead	mg/L	0.00002		0.00020	0.00362	0.00195	<0.00002	0.00004
Molybdenum	mg/L	0.0001		0.0024	0.0041	0.0059	<0.0001	0.0003
Nickel	mg/L	0.0002		0.0396	0.0742	0.146	0.0010	0.0004
Selenium	mg/L	0.001		<0.001	<0.002	<0.002	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0002	<0.0002	<0.0001	<0.0001
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		<0.00005	0.00010	<0.00005	<0.00005	0.00022
Vanadium	mg/L	0.0001		0.0017	0.0069	0.0109	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	0.00002	0.00002
Anion Sum	meq/L	-		79.1	146	162	11.3	9.37
Cation Sum	meq/L	-		81.3	154	161	11.5	9.31
% Difference	%	-		1.35	2.56	0.374 (12)	1.10	0.302
Ion Ratio	-	-		0.973	0.950	1.01	0.978	1.01
Sodium Adsorption Ratio	-	-		9.51	24.7	23.1	0.803	0.408
TDS (Ion Sum Calc)	mg/L	1		4210	7840	8570	577	483
TDS(calc.)/EC(actual)	-	-		0.485	0.646	0.502	0.529	0.518
Conductivity Calc	µmho/cm	-		6150	10300	10800	1050	906
Conductivity Calc / Conductivity	-	-		0.709	0.851	0.635	0.958	0.972
Langelier Index(25°C)	-	-		1.86	2.28	2.30	0.931	0.962

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			Client I.D.	6-90-II	7-90	7-90-II	11-90	32-93-I
			Sample I.D.	24-013311-1	24-013311-2	24-013311-3	24-013311-4	24-013311-5
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
Parameter	**Units**	**R.L.**		-	-	-	-	-
Saturation pH (25°C)	-	-		5.93	5.73	5.72	6.81	6.99
pH (Client Data)	pH units	-		6.73	6.98	7.14	7.71	7.30
Temperature (Client Data)	°C	-		15.9	14.4	18.0	10.7	13.0

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			Client I.D.	32-93-II	43-93-I	43-93-II	44-93-I	44-93-II
			Sample I.D.	24-013311-6	24-013311-7	24-013311-8	24-013311-9	24-013311-10
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		272	259	574	253	364
TDS (Calc. from Cond.)	mg/L	3		497	442	672	482	1020
Conductivity @25°C	uS/cm	1		935	838	1240	909	1850
pH @25°C	pH units	-		7.85	7.80	7.61	7.86	7.70
Colour	TCU	2		<2	<2	<2	<2	<2
Turbidity	NTU	0.1		643	348	142	7.4	322
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.7
Chloride	mg/L	0.5		109	81.9	37.0	109	343
Nitrate (N)	mg/L	0.05		0.06	0.11	<0.05	<0.05	2.16
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	0.05	<0.40
Sulphate	mg/L	1		44	50	55	50	29
BOD5	mg/L	3		<3	<3	8	<3	<3
Total Suspended Solids	mg/L	3		4860	726	334	14	466
Phosphorus (Total)	mg/L	0.01		0.88	0.16	0.17	0.05	0.27
Total Kjeldahl Nitrogen	mg/L	0.1		0.9	0.5	1.7	0.3	0.3
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.38	0.26	<0.05	<0.05	<0.05
Ammonia (N)-unionized	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		2.9	3.0	6.9	2.7	2.8
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		99	29	34	13	40

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			Client I.D.	32-93-II	43-93-I	43-93-II	44-93-I	44-93-II
			Sample I.D.	24-013311-6	24-013311-7	24-013311-8	24-013311-9	24-013311-10
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
Parameter	**Units**	**R.L.**		-	-	-	-	-
Hardness (as CaCO3)	mg/L	0.02		415	388	616	403	488
Aluminum	mg/L	0.01		0.04	0.06	0.07	0.05	0.07
Barium	mg/L	0.001		0.150	0.066	0.156	0.189	0.118
Boron	mg/L	0.005		0.048	0.064	0.011	0.060	0.017
Calcium	mg/L	0.02		110	90.7	218	98.5	166
Iron	mg/L	0.005		0.516	0.370	0.013	0.618	<0.005
Magnesium	mg/L	0.02		34.3	39.3	17.5	38.0	18.1
Manganese	mg/L	0.001		0.013	0.011	0.016	0.013	0.001
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		2.9	3.3	1.0	2.9	1.5
Sodium	mg/L	0.2		19.2	10.1	24.2	16.0	119
Strontium	mg/L	0.001		0.891	1.14	0.510	1.000	0.604
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0001	<0.0001	0.0002	<0.0001	0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0002	0.0002	0.0006	0.0002	0.0003

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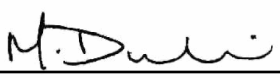
Parameter	Units	R.L.	Client I.D.	32-93-II	43-93-I	43-93-II	44-93-I	44-93-II
			Sample I.D.	24-013311-6	24-013311-7	24-013311-8	24-013311-9	24-013311-10
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
				-	-	-	-	-
Copper	mg/L	0.0001		<0.0001	0.0003	0.0003	0.0001	0.0004
Lead	mg/L	0.00002		0.00005	0.00010	0.00002	0.00004	0.00004
Molybdenum	mg/L	0.0001		0.0002	<0.0001	0.0001	0.0002	0.0004
Nickel	mg/L	0.0002		<0.0002	0.0008	0.0006	0.0009	0.0004
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		<0.00005	<0.00005	0.00064	<0.00005	0.00050
Vanadium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	0.00002	0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		9.44	8.54	13.7	9.19	17.7
Cation Sum	meq/L	-		9.28	8.35	13.4	8.86	15.0
% Difference	%	-		0.855	1.13	1.06	1.83	8.45
Ion Ratio	-	-		1.02	1.02	1.02	1.04	1.18
Sodium Adsorption Ratio	-	-		0.410	0.223	0.425	0.346	2.34
TDS (Ion Sum Calc)	mg/L	1		484	432	697	468	906
TDS(calc.)/EC(actual)	-	-		0.518	0.515	0.560	0.515	0.490
Conductivity Calc	µmho/cm	-		905	810	1170	877	1620
Conductivity Calc / Conductivity	-	-		0.968	0.966	0.941	0.965	0.877
Langelier Index(25°C)	-	-		0.861	0.709	1.22	0.794	0.978



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		Client I.D.	32-93-II	43-93-I	43-93-II	44-93-I	44-93-II
		Sample I.D.	24-013311-6	24-013311-7	24-013311-8	24-013311-9	24-013311-10
		Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
Parameter	**Units**	**R.L.**	-	-	-	-	-
Saturation pH (25°C)	-	-	6.99	7.09	6.39	7.07	6.72
pH (Client Data)	pH units	-	7.05	7.64	7.47	7.81	7.89
Temperature (Client Data)	°C	-	10.2	11.1	8.9	10.3	8.7

Michelle Dubien
Data Specialist

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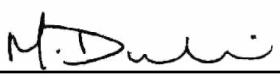
Parameter	Units	R.L.	Client I.D.	45-93	53-98	55-98-I	55-98-II	56-02-1
			Sample I.D.	24-013311-11	24-013311-12	24-013311-13	24-013311-14	24-013311-15
			Date Collected	2024-05-07	2024-05-08	2024-05-07	2024-05-07	2024-05-06
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		383	358	243	241	252
TDS (Calc. from Cond.)	mg/L	3		660	1300	477	451	541
Conductivity @25°C	uS/cm	1		1220	2350	900	854	1010
pH @25°C	pH units	-		7.77	7.69	8.00	7.91	7.80
Colour	TCU	2		<2	<2	<2	<2	<2
Turbidity	NTU	0.1		1600	126	25.2	10.6	185
Fluoride	mg/L	0.1		<0.1	<0.7	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		152	531	118	106	149
Nitrate (N)	mg/L	0.05		0.38	<0.40	<0.05	<0.05	0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.40	<0.05	<0.05	<0.05
Sulphate	mg/L	1		18	32	38	38	37
BOD5	mg/L	3		<3	<3	<3	<3	3
Total Suspended Solids	mg/L	3		3050	68	66	5	482
Phosphorus (Total)	mg/L	0.01		0.91	0.02	0.04	<0.01	0.17
Total Kjeldahl Nitrogen	mg/L	0.1		0.9	0.2	1.0	<0.1	0.7
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		<0.05	<0.05	0.97	0.20	0.43
Ammonia (N)-unionized	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		2.7	2.2	2.2	2.0	2.1
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		53	29	11	19	48



Michelle Dubien
Data Specialist

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			Client I.D.	45-93	53-98	55-98-I	55-98-II	56-02-1
			Sample I.D.	24-013311-11	24-013311-12	24-013311-13	24-013311-14	24-013311-15
			Date Collected	2024-05-07	2024-05-08	2024-05-07	2024-05-07	2024-05-06
Parameter	Units	R.L.		-	-	-	-	-
Hardness (as CaCO3)	mg/L	0.02		322	796	347	389	434
Aluminum	mg/L	0.01		0.05	0.08	0.02	0.03	0.03
Barium	mg/L	0.001		0.070	1.06	0.113	0.260	0.189
Boron	mg/L	0.005		0.011	0.070	0.111	0.096	0.095
Calcium	mg/L	0.02		113	243	67.5	79.2	95.0
Iron	mg/L	0.005		<0.005	0.639	0.517	0.866	0.701
Magnesium	mg/L	0.02		9.45	46.0	43.3	46.5	47.8
Manganese	mg/L	0.001		<0.001	0.110	0.012	0.015	0.015
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		1.3	3.7	4.9	3.2	4.4
Sodium	mg/L	0.2		151	134	32.7	11.4	19.3
Strontium	mg/L	0.001		0.312	1.97	1.99	1.49	1.91
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		<0.0001	<0.0001	<0.0001	0.0001	<0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0002	0.0004	0.0001	0.0002	0.0015

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Parameter	Units	R.L.	Client I.D.	45-93	53-98	55-98-I	55-98-II	56-02-1
			Sample I.D.	24-013311-11	24-013311-12	24-013311-13	24-013311-14	24-013311-15
			Date Collected	2024-05-07	2024-05-08	2024-05-07	2024-05-07	2024-05-06
				-	-	-	-	-
Copper	mg/L	0.0001		0.0005	0.0012	0.0002	<0.0001	0.0001
Lead	mg/L	0.00002		0.00002	0.00009	<0.00002	<0.00002	0.00006
Molybdenum	mg/L	0.0001		0.0004	<0.0001	0.0001	0.0002	<0.0001
Nickel	mg/L	0.0002		0.0006	<0.0002	0.0006	0.0006	0.0009
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	0.0009	<0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00044	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	0.0001		0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		12.3	22.8	8.96	8.62	10.0
Cation Sum	meq/L	-		13.0	21.9	8.63	8.43	9.72
% Difference	%	-		2.68	2.07	1.90	1.06	1.49
Ion Ratio	-	-		0.948	1.04	1.04	1.02	1.03
Sodium Adsorption Ratio	-	-		3.66	2.07	0.764	0.251	0.403
TDS (Ion Sum Calc)	mg/L	1		677	1210	452	430	505
TDS(calc.)/EC(actual)	-	-		0.553	0.513	0.502	0.504	0.498
Conductivity Calc	µmho/cm	-		1200	2190	859	827	969
Conductivity Calc / Conductivity	-	-		0.983	0.930	0.955	0.969	0.956
Langelier Index(25°C)	-	-		0.924	1.12	0.751	0.729	0.716



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			Client I.D.	45-93	53-98	55-98-I	55-98-II	56-02-1
			Sample I.D.	24-013311-11	24-013311-12	24-013311-13	24-013311-14	24-013311-15
			Date Collected	2024-05-07	2024-05-08	2024-05-07	2024-05-07	2024-05-06
Parameter	**Units**	**R.L.**		-	-	-	-	-
Saturation pH (25°C)	-	-		6.85	6.57	7.25	7.18	7.08
pH (Client Data)	pH units	-		7.73	7.62	7.40	6.98	7.27
Temperature (Client Data)	°C	-		7.6	10.1	11.0	9.3	10.6

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			Client I.D.	57-02-II	58-I	61-10-I	61-10-II	61-17-I
			Sample I.D.	24-013311-16	24-013311-17	24-013311-18	24-013311-19	24-013311-20
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		294	530	408	390	440
TDS (Calc. from Cond.)	mg/L	3		908	949	753	782	806
Conductivity @25°C	uS/cm	1		1660	1730	1390	1440	1480
pH @25°C	pH units	-		7.81	7.49	7.68	7.67	7.71
Colour	TCU	2		<2	2	<2	<2	2
Turbidity	NTU	0.1		15.4	58.9	1.7	904	462
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		292	191	175	179	184
Nitrate (N)	mg/L	0.05		0.38	<0.05	<0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05		0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		88	115	54	94	56
BOD5	mg/L	3		<3	<3	<3	<3	<3
Total Suspended Solids	mg/L	3		47	76	40	1900	1630
Phosphorus (Total)	mg/L	0.01		0.03	0.06	0.02	0.68	2.43
Total Kjeldahl Nitrogen	mg/L	0.1		0.3	0.4	1.1	1.3	1.5
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		<0.05	0.12	0.62	1.47	0.46
Ammonia (N)-unionized	mg/L	0.01		<0.01	<0.01	<0.01	0.02	<0.01
Dissolved Organic Carbon	mg/L	0.2		2.4	5.2	8.2	3.2	8.9
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		25	30	32	66	163

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			Client I.D.	57-02-II	58-I	61-10-I	61-10-II	61-17-I
			Sample I.D.	24-013311-16	24-013311-17	24-013311-18	24-013311-19	24-013311-20
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
Parameter	**Units**	**R.L.**		-	-	-	-	-
Hardness (as CaCO3)	mg/L	0.02		417	740	602	591	592
Aluminum	mg/L	0.01		0.06	0.08	0.06	0.06	0.05
Barium	mg/L	0.001		0.152	0.186	0.480	0.157	0.552
Boron	mg/L	0.005		0.083	0.168	0.136	0.021	0.144
Calcium	mg/L	0.02		148	245	149	177	143
Iron	mg/L	0.005		<0.005	0.053	0.715	0.171	0.509
Magnesium	mg/L	0.02		11.8	31.3	56.0	36.4	56.9
Manganese	mg/L	0.001		<0.001	0.027	0.025	0.078	0.022
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		1.9	2.5	4.6	2.3	4.9
Sodium	mg/L	0.2		163	69.8	65.0	52.2	68.6
Strontium	mg/L	0.001		0.613	1.01	1.66	0.738	1.72
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		<0.0001	0.0003	<0.0001	0.0001	<0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0003	0.0008	0.0003	0.0022	0.0003

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			Client I.D.	57-02-II	58-I	61-10-I	61-10-II	61-17-I
			Sample I.D.	24-013311-16	24-013311-17	24-013311-18	24-013311-19	24-013311-20
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
Parameter	**Units**	**R.L.**		-	-	-	-	-
Copper	mg/L	0.0001		0.0006	0.0007	<0.0001	0.0002	0.0009
Lead	mg/L	0.00002		0.00002	<0.00004	<0.00002	<0.00002	0.00006
Molybdenum	mg/L	0.0001		0.0001	0.0002	<0.0001	0.0008	<0.0001
Nickel	mg/L	0.0002		0.0007	0.0019	0.0038	0.0009	0.0044
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00074	0.00100	<0.00005	0.00090	<0.00005
Vanadium	mg/L	0.0001		<0.0001	<0.0001	0.0003	<0.0001	0.0004
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		16.0	18.4	14.2	14.8	15.1
Cation Sum	meq/L	-		15.5	17.9	15.1	14.3	15.0
% Difference	%	-		1.54	1.32	2.91	1.76	0.344
Ion Ratio	-	-		1.03	1.03	0.943	1.04	1.01
Sodium Adsorption Ratio	-	-		3.47	1.12	1.15	0.934	1.23
TDS (Ion Sum Calc)	mg/L	1		881	973	749	778	779
TDS(calc.)/EC(actual)	-	-		0.532	0.562	0.540	0.541	0.526
Conductivity Calc	µmho/cm	-		1550	1630	1350	1360	1390
Conductivity Calc / Conductivity	-	-		0.935	0.939	0.975	0.947	0.938
Langelier Index(25°C)	-	-		0.954	1.10	0.980	1.03	1.03

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		Client I.D.	57-02-II	58-I	61-10-I	61-10-II	61-17-I
		Sample I.D.	24-013311-16	24-013311-17	24-013311-18	24-013311-19	24-013311-20
		Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
Parameter	**Units**	**R.L.**	-	-	-	-	-
Saturation pH (25°C)	-	-	6.86	6.39	6.70	6.64	6.68
pH (Client Data)	pH units	-	7.76	7.27	7.38	7.79	7.44
Temperature (Client Data)	°C	-	8.7	9.3	11.8	8.8	12.1

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Parameter	Units	R.L.	Client I.D.	62-17-I	62-17-II	62-17-III	Dup 1	Dup 2
			Sample I.D.	24-013311-21	24-013311-22	24-013311-23	24-013311-24	24-013311-25
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-06	2024-05-07
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		524	380	402	252	241
TDS (Calc. from Cond.)	mg/L	3		814	560	530	543	450
Conductivity @25°C	uS/cm	1		1490	1050	994	1020	852
pH @25°C	pH units	-		7.87	7.76	7.86	7.84	8.18
Colour	TCU	2		6	<2	<2	<2	<2
Turbidity	NTU	0.1		149	169	2260	212	9.2
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	0.1
Chloride	mg/L	0.5		156	68.7	48.1	149	107
Nitrate (N)	mg/L	0.05		<0.05	<0.05	<0.05	0.06	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	0.09	<0.05
Sulphate	mg/L	1		23	71	60	37	38
BOD5	mg/L	3		<3	<3	<3	<3	<3
Total Suspended Solids	mg/L	3		80	358	468	494	11
Phosphorus (Total)	mg/L	0.01		0.04	0.13	0.13	0.32	0.01
Total Kjeldahl Nitrogen	mg/L	0.1		1.4	1.1	<0.1	0.6	<0.1
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.14	0.46	<0.05	0.53	0.18
Ammonia (N)-unionized	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		9.4	6.2	3.8	2.1	2.1
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		46	29	25	33	8

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	Client I.D.	62-17-I	62-17-II	62-17-III	Dup 1	Dup 2
	Sample I.D.	24-013311-21	24-013311-22	24-013311-23	24-013311-24	24-013311-25
	Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-06	2024-05-07
Parameter	**Units** **R.L.**	-	-	-	-	-
Hardness (as CaCO3)	mg/L 0.02	382	480	391	432	386
Aluminum	mg/L 0.01	0.04	0.06	0.04	0.04	0.03
Barium	mg/L 0.001	0.520	0.230	0.211	0.189	0.256
Boron	mg/L 0.005	0.170	0.073	0.030	0.094	0.094
Calcium	mg/L 0.02	114	128	101	94.8	78.4
Iron	mg/L 0.005	0.058	0.542	0.006	0.666	0.824
Magnesium	mg/L 0.02	23.2	38.7	33.3	47.6	46.3
Manganese	mg/L 0.001	0.037	0.027	0.002	0.015	0.015
Phosphorus	mg/L 0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L 0.1	4.1	3.2	4.4	4.5	3.2
Sodium	mg/L 0.2	172	33.9	74.6	19.3	11.3
Strontium	mg/L 0.001	2.94	1.02	0.695	1.90	1.47
Tin	mg/L 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L 0.0001	0.0002	<0.0001	0.0002	<0.0001	<0.0001
Beryllium	mg/L 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L 0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L 0.0001	0.0004	0.0002	0.0002	0.0015	0.0002

Michelle Dubien
Data Specialist

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	Client I.D.	62-17-I	62-17-II	62-17-III	Dup 1	Dup 2
	Sample I.D.	24-013311-21	24-013311-22	24-013311-23	24-013311-24	24-013311-25
	Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-06	2024-05-07
Parameter	Units R.L.	-	-	-	-	-
Copper	mg/L 0.0001	0.0003	0.0002	0.0004	<0.0001	<0.0001
Lead	mg/L 0.00002	0.00003	0.00006	<0.00002	0.00004	<0.00002
Molybdenum	mg/L 0.0001	0.0002	<0.0001	0.0019	<0.0001	0.0002
Nickel	mg/L 0.0002	0.0044	0.0015	0.0006	0.0009	0.0006
Selenium	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium	mg/L 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L 0.00005	0.00065	<0.00005	0.00051	<0.00005	<0.00005
Vanadium	mg/L 0.0001	0.0007	0.0002	0.0002	<0.0001	<0.0001
Chromium (VI)	mg/L 0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L -	15.4	11.0	10.7	10.0	8.62
Cation Sum	meq/L -	15.3	11.2	11.2	9.68	8.37
% Difference	% -	0.299	1.13	2.39	1.70	1.51
Ion Ratio	- -	1.01	0.978	0.953	1.03	1.03
Sodium Adsorption Ratio	- -	3.82	0.674	1.64	0.404	0.250
TDS (Ion Sum Calc)	mg/L 1	807	573	564	504	429
TDS(calc.)/EC(actual)	- -	0.541	0.548	0.567	0.496	0.504
Conductivity Calc	µmho/cm -	1390	1010	978	966	825
Conductivity Calc / Conductivity	- -	0.931	0.967	0.984	0.951	0.969
Langelier Index(25°C)	- -	1.16	0.976	0.998	0.756	0.993

Michelle Dubien
Data Specialist

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		Client I.D.	62-17-I	62-17-II	62-17-III	Dup 1	Dup 2
		Sample I.D.	24-013311-21	24-013311-22	24-013311-23	24-013311-24	24-013311-25
		Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-06	2024-05-07
Parameter	**Units**	**R.L.**	-	-	-	-	-
Saturation pH (25°C)	-	-	6.71	6.78	6.86	7.08	7.19
pH (Client Data)	pH units	-	7.72	7.50	7.72	7.27	6.98
Temperature (Client Data)	°C	-	13.1	13.5	9.3	10.6	9.3

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	Client I.D.		Dup 3
	Sample I.D.		24-013311-26
	Date Collected		2024-05-07
Parameter	Units	R.L.	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	258
TDS (Calc. from Cond.)	mg/L	3	439
Conductivity @25°C	uS/cm	1	833
pH @25°C	pH units	-	7.94
Colour	TCU	2	<2
Turbidity	NTU	0.1	654
Fluoride	mg/L	0.1	<0.1
Chloride	mg/L	0.5	82.2
Nitrate (N)	mg/L	0.05	0.16
Nitrite (N)	mg/L	0.05	<0.05
Sulphate	mg/L	1	50
BOD5	mg/L	3	<3
Total Suspended Solids	mg/L	3	926
Phosphorus (Total)	mg/L	0.01	0.17
Total Kjeldahl Nitrogen	mg/L	0.1	<0.1
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.21
Ammonia (N)-unionized	mg/L	0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2	2.4
Cyanide (WAD)	mg/L	0.005	<0.005
Phenolics	mg/L	0.001	<0.001
COD	mg/L	5	32

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			Client I.D.	Dup 3
			Sample I.D.	24-013311-26
			Date Collected	2024-05-07
Parameter	Units	R.L.		-
Hardness (as CaCO3)	mg/L	0.02		392
Aluminum	mg/L	0.01		0.07
Barium	mg/L	0.001		0.067
Boron	mg/L	0.005		0.062
Calcium	mg/L	0.02		92.4
Iron	mg/L	0.005		0.363
Magnesium	mg/L	0.02		39.1
Manganese	mg/L	0.001		0.011
Phosphorus	mg/L	0.1		<0.1
Potassium	mg/L	0.1		3.2
Sodium	mg/L	0.2		10.0
Strontium	mg/L	0.001		1.13
Tin	mg/L	0.05		<0.05
Titanium	mg/L	0.005		<0.005
Zinc	mg/L	0.005		<0.005
Antimony	mg/L	0.0001		<0.0001
Arsenic	mg/L	0.0001		<0.0001
Beryllium	mg/L	0.0001		<0.0001
Cadmium	mg/L	0.000015		<0.000015
Chromium	mg/L	0.001		<0.001
Cobalt	mg/L	0.0001		0.0002

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Data Specialist

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			Client I.D.	Dup 3
			Sample I.D.	24-013311-26
			Date Collected	2024-05-07
Parameter	Units	R.L.		-
Copper	mg/L	0.0001		<0.0001
Lead	mg/L	0.00002		0.00008
Molybdenum	mg/L	0.0001		<0.0001
Nickel	mg/L	0.0002		0.0008
Selenium	mg/L	0.001		<0.001
Silver	mg/L	0.0001		<0.0001
Thallium	mg/L	0.00005		<0.00005
Uranium	mg/L	0.00005		<0.00005
Vanadium	mg/L	0.0001		<0.0001
Chromium (VI)	mg/L	0.01		<0.01
Mercury	mg/L	0.00002		<0.00002
Anion Sum	meq/L	-		8.54
Cation Sum	meq/L	-		8.39
% Difference	%	-		0.900
Ion Ratio	-	-		1.02
Sodium Adsorption Ratio	-	-		0.219
TDS (Ion Sum Calc)	mg/L	1		433
TDS(calc.)/EC(actual)	-	-		0.520
Conductivity Calc	µmho/cm	-		812
Conductivity Calc / Conductivity	-	-		0.975
Langelier Index(25°C)	-	-		0.855

Michelle Dubien
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			Client I.D.	Dup 3
			Sample I.D.	24-013311-26
			Date Collected	2024-05-07
Parameter	Units	R.L.		-
Saturation pH (25°C)	-	-		7.08
pH (Client Data)	pH units	-		7.64
Temperature (Client Data)	°C	-		11.1

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Parameter	Units	R.L.	Client I.D.	6-90-II	7-90	7-90-II	11-90	32-93-I
			Sample I.D.	24-013311-1	24-013311-2	24-013311-3	24-013311-4	24-013311-5
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
				-	-	-	-	-
Acetone	µg/L	30		<30	<30	<30		
Benzene	µg/L	0.5		7.0	2.6	4.5	<0.5	<0.5
Bromodichloromethane	µg/L	2		<2	<2	<2		
Bromoform	µg/L	5		<5	<5	<5		
Bromomethane	µg/L	0.5		<0.5	<0.5	<0.5		
Carbon Tetrachloride	µg/L	0.2		<0.2	<0.2	<0.2		
Chlorobenzene	µg/L	0.5		1.0	4.3	5.8		
Chloroform	µg/L	1		<1	<1	<1		
Chloromethane (Methyl Chloride)	µg/L	2		<2	<2	<2		
Dibromochloromethane	µg/L	2		<2	<2	<2		
Ethylene Dibromide	µg/L	0.2		<0.2	<0.2	<0.2		
Dichlorobenzene,1,2-	µg/L	0.5		<0.5	<0.5	<0.5		
Dichlorobenzene,1,3-	µg/L	0.5		<0.5	<0.5	<0.5		
Dichlorobenzene,1,4-	µg/L	0.5		2.1	4.6	5.4		
Dichloroethane,1,1-	µg/L	0.5		<0.5	<0.5	1.2		
Dichloroethane,1,2-	µg/L	0.5		<0.5	<0.5	<0.5		
Dichloroethylene,1,1-	µg/L	0.5		<0.5	<0.5	<0.5		
Dichloroethylene,1,2-cis-	µg/L	0.5		<0.5	<0.5	<0.5		
Dichloroethylene,1,2-trans-	µg/L	0.5		<0.5	<0.5	<0.5		
Dichloropropane,1,2-	µg/L	0.5		<0.5	<0.5	<0.5		
Dichloropropene,1,3-cis-	µg/L	0.5		<0.5	<0.5	<0.5		

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Parameter	Units	R.L.	Client I.D.	6-90-II	7-90	7-90-II	11-90	32-93-I
			Sample I.D.	24-013311-1	24-013311-2	24-013311-3	24-013311-4	24-013311-5
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
				-	-	-	-	-
Dichloropropene,1,3-trans-	µg/L	0.5		<0.5	<0.5	<0.5		
Ethylbenzene	µg/L	0.5		<0.5	0.7	41.3	<0.5	<0.5
Dichloromethane (Methylene Chloride)	µg/L	5		<5	<5	<5		
Methyl Ethyl Ketone	µg/L	2		2	2	3		
Methyl Isobutyl Ketone	µg/L	20		<20	<20	<20		
Methyl tert-Butyl Ether (MTBE)	µg/L	2		<2	2	<2		
Styrene	µg/L	0.5		<0.5	<0.5	0.6		
Tetrachloroethane,1,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5		
Tetrachloroethane,1,1,2,2-	µg/L	0.5		<0.5	<0.5	<0.5		
Tetrachloroethylene	µg/L	0.5		<0.5	<0.5	<0.5		
Toluene	µg/L	0.5		<0.5	<0.5	4.6	<0.5	<0.5
Trichlorobenzene,1,2,4-	µg/L	0.5		<0.5	<0.5	<0.5		
Trichloroethane,1,1,1-	µg/L	0.5		<0.5	<0.5	<0.5		
Trichloroethane,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5		
Trichloroethylene	µg/L	0.5		<0.5	<0.5	<0.5		
Trichlorofluoromethane (Freon 11)	µg/L	5		<5	<5	<5		
Vinyl Chloride	µg/L	0.2		<0.2	<0.2	<0.2		
Xylene, m,p-	µg/L	1		25	5	6	<1	<1
Xylene, m,p,o-	µg/L	1.1					<1.1	<1.1
Xylene, o-	µg/L	0.5		5.8	31.6	52.6	<0.5	<0.5

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		Client I.D.	32-93-II	43-93-I	43-93-II	44-93-I	44-93-II
		Sample I.D.	24-013311-6	24-013311-7	24-013311-8	24-013311-9	24-013311-10
		Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
Parameter	Units	R.L.	-	-	-	-	-
Benzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1	<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5

		Client I.D.	45-93	53-98	55-98-I	55-98-II	56-02-1
		Sample I.D.	24-013311-11	24-013311-12	24-013311-13	24-013311-14	24-013311-15
		Date Collected	2024-05-07	2024-05-08	2024-05-07	2024-05-07	2024-05-06
Parameter	Units	R.L.	-	-	-	-	-
Benzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1	<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5

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Parameter	Units	R.L.	Client I.D.	57-02-II	58-I	61-10-I	61-10-II	61-17-I
			Sample I.D.	24-013311-16	24-013311-17	24-013311-18	24-013311-19	24-013311-20
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-07	2024-05-07
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	R.L.	Client I.D.	62-17-I	62-17-II	62-17-III	Dup 1	Dup 2
			Sample I.D.	24-013311-21	24-013311-22	24-013311-23	24-013311-24	24-013311-25
			Date Collected	2024-05-07	2024-05-07	2024-05-07	2024-05-06	2024-05-07
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

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			Client I.D.	Dup 3
			Sample I.D.	24-013311-26
			Date Collected	2024-05-07
Parameter	Units	R.L.		-
Benzene	µg/L	0.5		<0.5
Ethylbenzene	µg/L	0.5		<0.5
Toluene	µg/L	0.5		<0.5
Xylene, m,p-	µg/L	1		<1
Xylene, m,p,o-	µg/L	1.1		<1.1
Xylene, o-	µg/L	0.5		<0.5

Comments:

12. Unable to calculate ion balance due to sample matrix

Elevated RL due to sample matrix interferences

Samples 13311-1, -2, and -3 filtered from unpreserved due to sediment present in the metals bottles.
TKN and ammonia are outside analytical limits for sample #3 due to matrix interference
Elevated RLs due to sample matrix interferences

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-013298 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
112 Commerce Park Dr Unit L
Barrie, ON L4N 8W8

Attention: Kayla Pantaleo

DATE RECEIVED: 2024-May-08
DATE REPORTED: 2024-May-28
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay OPS
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	LMACGREGOR	2024-May-16	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	JWOLFE2	2024-May-15	BOD-001	SM 5210B
COD (Liquid)	1	KINGSTON	EHINCH	2024-May-21	COD-001	SM 5220D
Colour (Liquid)	1	OTTAWA	STAILLON	2024-May-14	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2024-May-15	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	1	KINGSTON	JMACINNES	2024-May-16	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	1	OTTAWA	VKASYAN	2024-May-17	C-OC-01	EPA 415.2
Ion Balance (Calc.)	1	OTTAWA	TPRICE		CP-028	MECP E3196
Chromium VI (Liquid)	1	OTTAWA	STAILLON	2024-May-16	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	1	OTTAWA	AOZKAYMAK	2024-May-15	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	NHOGAN	2024-May-17	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2024-May-17	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	1	KINGSTON	JYEARWOOD	2024-May-17	NH3-001	SM 4500NH3
NTA Liquid (Subcontract)	1	SGS_LAKEFIELD	CBURKE	2024-May-21		Subcontracted
OC Pesticides (Liquid)	1	KINGSTON	CSUMMERHAYS	2024-May-14	PESTCL-001	EPA 8081
PCB's (Liquid)	1	KINGSTON	CSUMMERHAYS	2024-May-15	PCB-001	EPA 8081
Phenols (Liquid)	1	KINGSTON	JMACINNES	2024-May-22	PHEN-01	MECP E3179
Radionuc. Liquid (Subcontract)	1	BUREAU_VERITAS	CBURKE	2024-May-28		Subcontracted
TP & TKN (Liquid)	1	KINGSTON	KDIBBITS	2024-May-16	TPTKN-001	MECP E3516.2
TSS (Liquid)	1	KINGSTON	MCLOSS	2024-May-21	TSS-001	SM 2540D
Turbidity (Liquid)	1	OTTAWA	PLUSSIER	2024-May-14	A-TURB-01	SM 2130B
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2024-May-18	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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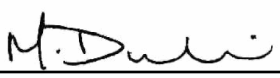
	Client I.D.		LPC 1
	Sample I.D.		24-013298-1
	Date Collected		2024-05-08
Parameter	Units	R.L.	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	629
TDS (Calc. from Cond.)	mg/L	3	910
Conductivity @25°C	uS/cm	1	1660
pH @25°C	pH units	-	7.38
Colour	TCU	2	8
Turbidity	NTU	0.1	991
Fluoride	mg/L	0.1	<0.1
Chloride	mg/L	0.5	138
Nitrate (N)	mg/L	0.05	<0.05
Nitrite (N)	mg/L	0.05	<0.05
Sulphate	mg/L	1	38
BOD5	mg/L	3	5
Total Suspended Solids	mg/L	3	1200
Phosphorus (Total)	mg/L	0.01	0.04
Total Kjeldahl Nitrogen	mg/L	0.1	8.8
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	7.50
Ammonia (N)-unionized	mg/L	0.01	0.03
Dissolved Organic Carbon	mg/L	0.2	10.2
Cyanide (WAD)	mg/L	0.005	<0.005
Phenolics	mg/L	0.001	<0.001
COD	mg/L	5	124



Michelle Dubien
Data Specialist

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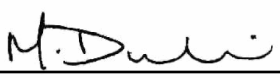
		Client I.D.	LPC 1
		Sample I.D.	24-013298-1
		Date Collected	2024-05-08
Parameter	**Units**	**R.L.**	-
Hardness (as CaCO3)	mg/L	-	500
Aluminum (Total)	mg/L	0.01	0.12
Barium (Total)	mg/L	0.001	0.333
Beryllium (Total)	mg/L	0.001	<0.001
Boron (Total)	mg/L	0.005	0.276
Cadmium (Total)	mg/L	0.005	<0.005
Calcium (Total)	mg/L	0.02	173
Chromium (Total)	mg/L	0.002	0.002
Cobalt (Total)	mg/L	0.005	<0.005
Copper (Total)	mg/L	0.002	<0.002
Iron (Total)	mg/L	0.005	6.37
Lead (Total)	mg/L	0.02	<0.02
Magnesium (Total)	mg/L	0.02	27.4
Manganese (Total)	mg/L	0.001	0.385
Molybdenum (Total)	mg/L	0.01	<0.01
Nickel (Total)	mg/L	0.01	<0.01
Phosphorus (Total)	mg/L	0.1	<0.1
Potassium (Total)	mg/L	0.1	13.7
Silver (Total)	mg/L	0.005	<0.005
Sodium (Total)	mg/L	0.2	90.1
Strontium (Total)	mg/L	0.001	0.628



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		Client I.D.	LPC 1
		Sample I.D.	24-013298-1
		Date Collected	2024-05-08
Parameter	**Units**	**R.L.**	-
Tin (Total)	mg/L	0.05	<0.05
Titanium (Total)	mg/L	0.005	<0.005
Vanadium (Total)	mg/L	0.005	<0.005
Zinc (Total)	mg/L	0.005	0.020
Antimony (Total)	mg/L	0.0005	<0.0005
Arsenic (Total)	mg/L	0.0005	0.0008
Selenium (Total)	mg/L	0.005	<0.005
Thallium (Total)	mg/L	0.0003	<0.0003
Uranium (Total)	mg/L	0.0003	<0.0003
Chromium (VI)	mg/L	0.01	<0.01
Mercury	mg/L	0.00002	<0.00002
Anion Sum	meq/L	-	17.3
Cation Sum	meq/L	-	16.1
% Difference	%	-	3.58
Ion Ratio	-	-	1.07
Sodium Adsorption Ratio	-	-	1.68
TDS (Ion Sum Calc)	mg/L	1	875
TDS(calc.)/EC(actual)	-	-	0.527
Conductivity Calc	µmho/cm	-	1470
Conductivity Calc / Conductivity	-	-	0.884
Langelier Index(25°C)	-	-	0.924

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		Client I.D.	LPC 1
		Sample I.D.	24-013298-1
		Date Collected	2024-05-08
Parameter	Units	R.L.	-
Saturation pH (25°C)	-	-	6.46
pH (Client Data)	pH units	-	7.35
Temperature (Client Data)	°C	-	10.2

		Client I.D.	LPC 1
		Sample I.D.	24-013298-1
		Date Collected	2024-05-08
Parameter	Units	R.L.	-
Benzene	µg/L	0.5	1.0
Bromodichloromethane	µg/L	2	<2
Bromoform	µg/L	5	<5
Chloroform	µg/L	1	<1
Dibromochloromethane	µg/L	2	<2
Ethylbenzene	µg/L	0.5	<0.5
Total Trihalomethanes	µg/L	6	<6
Toluene	µg/L	0.5	<0.5
Xylene, m,p-	µg/L	1	<1
Xylene, m,p,o-	µg/L	1.1	<1.1
Xylene, o-	µg/L	0.5	<0.5

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			Client I.D.	LPC 1
			Sample I.D.	24-013298-1
			Date Collected	2024-05-08
Parameter	Units	R.L.		-
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05		<0.05
Identification Comment	-	-		-
BHC (alpha)	µg/L	0.4		<0.4
Aldrin	µg/L	0.01		<0.01
BHC (beta)	µg/L	0.4		<0.4
Chlordane (alpha)	µg/L	0.05		<0.05
Chlordane (gamma)	µg/L	0.05		<0.05
Chlordane (Alpha + Gamma)	µg/L	0.05		<0.05
BHC (delta)	µg/L	0.01		<0.01
p,p'-DDD	µg/L	0.05		<0.05
p,p'-DDE	µg/L	0.01		<0.01
o,p'-DDT	µg/L	0.05		<0.05
p,p'-DDT	µg/L	0.05		<0.05
Dieldrin	µg/L	0.01		<0.01
Endosulfan I	µg/L	0.05		<0.05
Endosulfan II	µg/L	0.05		<0.05
Endosulfan (Total)	µg/L	0.05		<0.05
Endosulfan Sulfate	µg/L	0.05		<0.05
Endrin	µg/L	0.05		<0.05
Heptachlor	µg/L	0.1		<0.1
Heptachlor Epoxide	µg/L	0.02		<0.02

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		Client I.D.	LPC 1
		Sample I.D.	24-013298-1
		Date Collected	2024-05-08
Parameter	Units	R.L.	-
Hexachlorobenzene	µg/L	0.01	<0.01
Lindane (Hexachlorocyclohexane, Gamma)	µg/L	0.01	<0.01
Methoxychlor	µg/L	0.05	<0.05
Mirex	µg/L	1	<1

Subcontracted Analyses

		Client I.D.	LPC 1
		Sample I.D.	24-013298-1
		Date Collected	2024-05-08
Parameter	Units	R.L.	-
Nitrilotriacetic acid (NTA)	mg/L	-	<0.03
Gross Alpha	Bq/L	-	0.13
Gross Beta	Bq/L	-	0.55

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-017347 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
112 Commerce Park Dr Unit L
Barrie, ON L4N 8W8

Attention: Kayla Pantaleo

DATE RECEIVED: 2024-Jun-12
DATE REPORTED: 2024-Jun-28
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS SW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	13	OTTAWA	PCURIEL	2024-Jun-14	A-IC-01	SM 4110B
BOD5 (Liquid)	13	KINGSTON	JWOLFE2	2024-Jun-19	BOD-001	SM 5210B
COD (Liquid)	13	KINGSTON	EHINCH	2024-Jun-18	COD-001	SM 5220D
Colour (Liquid)	13	OTTAWA	STAILLON	2024-Jun-18	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	13	OTTAWA	SLOZO	2024-Jun-17	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	13	KINGSTON	JMACINNES	2024-Jun-17	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	13	OTTAWA	VKASYAN	2024-Jun-14	C-OC-01	EPA 415.2
Ion Balance (Calc.)	13	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	13	OTTAWA	STAILLON	2024-Jun-17	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	13	OTTAWA	AOZKAYMAK	2024-Jun-14	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	13	OTTAWA	APRUDYVUS	2024-Jun-14	D-ICP-01	SM 3120B
ICP/OES (Liquid)	13	OTTAWA	TPRICE	2024-Jun-17	D-ICP-01	SM 3120B
Mercury (Liquid)	13	OTTAWA	TBENNETT	2024-Jun-14	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	13	KINGSTON	JYEARWOOD	2024-Jun-19	NH3-001	SM 4500NH3
Phenols (Liquid)	13	KINGSTON	JMACINNES	2024-Jun-25	PHEN-01	MECP E3179
Tannins (Liquid)	4	KINGSTON	EHINCH	2024-Jun-14	TAN-001	SM 5550
TP & TKN (Liquid)	13	KINGSTON	KDIBBITS	2024-Jun-20	TPTKN-001	MECP E3516.2
TSS (Liquid)	13	KINGSTON	DCASSIDY	2024-Jun-20	TSS-001	SM 2540D
Turbidity (Liquid)	13	OTTAWA	PLUSSIER	2024-Jun-14	A-TURB-01	SM 2130B
VOC-Volatiles Full (Water)	2	RICHMOND_HILL	FLENA	2024-Jun-16	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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	Client I.D.	SCG-UPSTREAM	SCG-DOWNSTREAM	EMBAY A	EMBAY B	EMBAY C
	Sample I.D.	24-017347-1	24-017347-2	24-017347-3	24-017347-4	24-017347-5
	Date Collected	2024-06-11	2024-06-11	2024-06-11	2024-06-11	2024-06-11
Parameter	**Units** / **R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L / 5	155	136	179	143	118
Conductivity @25°C	uS/cm / 1	444	446	1350	433	402
pH @25°C	pH units / -	7.67	7.38	8.03	7.37	7.28
Colour	TCU / 2	22	21	12	21	24
Turbidity	NTU / 0.1	2.5	2.4	1.8	1.6	0.9
Fluoride	mg/L / 0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L / 0.5	42.5	49.1	275	44.8	49.9
Nitrate (N)	mg/L / 0.05	0.19	0.19	7.87	0.14	<0.05
Nitrite (N)	mg/L / 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L / 1	11	13	59	11	13
BOD5	mg/L / 3	<3	<3	<3	<3	<3
Total Suspended Solids	mg/L / 3	4	5	4	5	<3
Phosphorus (Total)	mg/L / 0.01	0.03	0.03	0.03	0.03	0.02
Total Kjeldahl Nitrogen	mg/L / 0.1	0.8	1.1	1.6	0.8	0.8
Ammonia (N)-Total (NH3+NH4)	mg/L / 0.05	0.06	0.85	0.82	0.07	<0.05
Ammonia (N)-unionized	mg/L / 0.01	<0.01	0.05	0.08	<0.01	<0.01
Dissolved Organic Carbon	mg/L / 0.2	9.5	9.0	3.7	9.0	9.7
Cyanide (WAD)	mg/L / 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L / 0.001	<0.001	<0.001	0.004	<0.001	<0.001
COD	mg/L / 5	31	34	29	29	32
Aluminum	mg/L / 0.01	0.04	0.04	0.31	0.04	0.04

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Parameter	Units	R.L.	Client I.D.	SCG-UPSTREAM	SCG-DOWNSTREAM	EMBAY A	EMBAY B	EMBAY C
			Sample I.D.	24-017347-1	24-017347-2	24-017347-3	24-017347-4	24-017347-5
			Date Collected	2024-06-11	2024-06-11	2024-06-11	2024-06-11	2024-06-11
				-	-	-	-	-
Hardness (as CaCO3)	mg/L	0.02		195	177	309	178	149
Aluminum (Total)	mg/L	0.01		0.03	0.03	0.45	0.02	0.01
Barium (Total)	mg/L	0.001		0.037	0.032	0.039	0.032	0.034
Boron (Total)	mg/L	0.005		0.011	0.014	0.156	0.010	0.014
Calcium (Total)	mg/L	0.02		62.3	54.7	99.6	55.6	44.0
Iron (Total)	mg/L	0.005		0.079	0.070	0.020	0.062	0.022
Magnesium (Total)	mg/L	0.02		9.54	9.66	14.7	9.40	9.50
Manganese (Total)	mg/L	0.001		0.037	0.026	0.007	0.025	0.009
Phosphorus (Total)	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium (Total)	mg/L	0.1		1.0	1.4	14.2	1.0	0.6
Sodium (Total)	mg/L	0.2		23.2	29.4	165	24.5	28.7
Strontium (Total)	mg/L	0.001		0.206	0.194	0.323	0.192	0.178
Tin (Total)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium (Total)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc (Total)	mg/L	0.005		<0.005	<0.005	0.019	<0.005	<0.005
Antimony (Total)	mg/L	0.0001		0.0004	0.0004	0.0005	0.0004	0.0004
Arsenic (Total)	mg/L	0.0001		0.0003	0.0003	0.0002	0.0003	0.0003
Beryllium (Total)	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium (Total)	mg/L	0.000015		<0.000015	<0.000015	0.000026	<0.000015	<0.000015
Chromium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Total)	mg/L	0.0001		0.0002	0.0002	0.0003	0.0002	0.0002

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Parameter	Units	R.L.	Client I.D.	SCG-UPSTREAM	SCG-DOWNSTREAM	EMBAY A	EMBAY B	EMBAY C
			Sample I.D.	24-017347-1	24-017347-2	24-017347-3	24-017347-4	24-017347-5
			Date Collected	2024-06-11	2024-06-11	2024-06-11	2024-06-11	2024-06-11
				-	-	-	-	-
Copper (Total)	mg/L	0.0001		0.0005	0.0006	0.0050	0.0005	0.0006
Lead (Total)	mg/L	0.00002		0.00013	0.00015	0.00047	0.00008	0.00004
Molybdenum (Total)	mg/L	0.0001		0.0002	0.0003	0.0027	0.0002	0.0002
Nickel (Total)	mg/L	0.0002		0.0006	0.0006	0.0017	0.0006	0.0006
Selenium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium (Total)	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005		0.00041	0.00039	0.00016	0.00041	0.00031
Vanadium (Total)	mg/L	0.0001		0.0004	0.0004	0.0003	0.0004	0.0003
Chromium (VI)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		4.54	4.38	13.1	4.37	4.04
Cation Sum	meq/L	-		4.95	4.91	13.8	4.65	4.25
% Difference	%	-		4.27	5.70	2.43	3.10	2.60
Ion Ratio	-	-		0.918	0.892	0.953	0.940	0.949
Sodium Adsorption Ratio	-	-		0.725	0.964	4.09	0.801	1.02
TDS (Ion Sum Calc)	mg/L	1		244	241	772	233	217
TDS(calc.)/EC(actual)	-	-		0.549	0.540	0.571	0.539	0.539
Conductivity Calc	µmho/cm	-		473	471	1390	454	425
Conductivity Calc / Conductivity	-	-		1.07	1.06	1.03	1.05	1.06
Langelier Index(25°C)	-	-		0.223	-0.180	0.799	-0.161	-0.438



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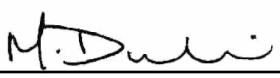
			Client I.D.	SCG-UPSTREAM	SCG-DOWNSTREAM	EMBAY A	EMBAY B	EMBAY C
			Sample I.D.	24-017347-1	24-017347-2	24-017347-3	24-017347-4	24-017347-5
			Date Collected	2024-06-11	2024-06-11	2024-06-11	2024-06-11	2024-06-11
Parameter	**Units**	**R.L.**		-	-	-	-	-
Saturation pH (25°C)	-	-		7.45	7.56	7.23	7.53	7.72
pH (Client Data)	pH units	-		8.51	8.34	8.60	8.52	8.73
Temperature (Client Data)	°C	-		18.5	16.8	15.8	17.2	14.6



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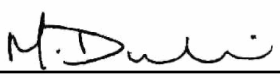
Parameter	Units	R.L.	Client I.D.	SW-2	SW-4	SW-14	SW-18	WPCP Effluent
			Sample I.D.	24-017347-6	24-017347-7	24-017347-8	24-017347-9	24-017347-10
			Date Collected	2024-06-11	2024-06-11	2024-06-11	2024-06-11	2024-06-11
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		317	305	244	207	181
Conductivity @25°C	uS/cm	1		1110	751	754	753	1360
pH @25°C	pH units	-		7.85	8.24	7.90	7.49	7.68
Colour	TCU	2		7	14	30	39	11
Turbidity	NTU	0.1		12.9	4.4	8.0	0.8	4.0
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		151	51.7	91.3	110	252
Nitrate (N)	mg/L	0.05		0.08	1.20	0.12	<0.05	8.37
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		27	15	6	4	59
BOD5	mg/L	3		6	3	4	3	3
Total Suspended Solids	mg/L	3		29	25	14	3	16
Phosphorus (Total)	mg/L	0.01		0.11	0.04	0.07	0.05	0.17
Total Kjeldahl Nitrogen	mg/L	0.1		1.8	0.6	1.2	1.2	1.5
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.94	0.07	0.22	0.10	0.19
Ammonia (N)-unionized	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		3.1	5.4	9.9	10.6	3.6
Tannin & Lignin	mg/L	0.5				1.0	1.2	
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		54	18	40	48	30



Michelle Dubien
Data Specialist

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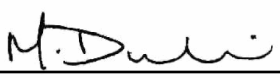
			Client I.D.	SW-2	SW-4	SW-14	SW-18	WPCP Effluent
			Sample I.D.	24-017347-6	24-017347-7	24-017347-8	24-017347-9	24-017347-10
			Date Collected	2024-06-11	2024-06-11	2024-06-11	2024-06-11	2024-06-11
Parameter	**Units**	**R.L.**		-	-	-	-	-
Aluminum	mg/L	0.01		0.07	0.08	0.06	0.04	0.09
Hardness (as CaCO3)	mg/L	0.02		420	353	264	221	303
Aluminum (Total)	mg/L	0.01		0.14	0.14	0.18	0.02	2.49
Barium (Total)	mg/L	0.001		0.297	0.043	0.047	0.040	0.052
Boron (Total)	mg/L	0.005		0.025	0.009	0.048	0.071	0.155
Calcium (Total)	mg/L	0.02		145	128	91.0	73.5	98.0
Iron (Total)	mg/L	0.005		0.814	0.224	0.594	0.210	0.064
Magnesium (Total)	mg/L	0.02		13.8	8.23	8.86	9.03	14.0
Manganese (Total)	mg/L	0.001		0.076	0.085	0.629	0.240	0.009
Phosphorus (Total)	mg/L	0.1		0.1	<0.1	<0.1	<0.1	0.2
Potassium (Total)	mg/L	0.1		2.9	1.3	4.1	6.0	13.7
Sodium (Total)	mg/L	0.2		79.2	30.2	56.8	70.4	160
Strontium (Total)	mg/L	0.001		0.466	0.340	0.289	0.269	0.320
Tin (Total)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium (Total)	mg/L	0.005		0.006	0.006	0.010	<0.005	<0.005
Zinc (Total)	mg/L	0.005		0.034	<0.005	<0.005	<0.005	0.030
Antimony (Total)	mg/L	0.0001		0.0006	0.0005	0.0005	0.0002	0.0006
Arsenic (Total)	mg/L	0.0001		0.0004	0.0004	0.0005	0.0005	0.0002
Beryllium (Total)	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium (Total)	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	0.000028
Chromium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001



Michelle Dubien
Data Specialist

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Parameter	Units	R.L.	Client I.D.	SW-2	SW-4	SW-14	SW-18	WPCP Effluent
			Sample I.D.	24-017347-6	24-017347-7	24-017347-8	24-017347-9	24-017347-10
			Date Collected	2024-06-11	2024-06-11	2024-06-11	2024-06-11	2024-06-11
				-	-	-	-	-
Cobalt (Total)	mg/L	0.0001		0.0005	0.0005	0.0005	0.0002	0.0004
Copper (Total)	mg/L	0.0001		0.0017	0.0008	0.0008	0.0005	0.0091
Lead (Total)	mg/L	0.00002		0.00021	0.00016	0.00015	<0.00002	0.00026
Molybdenum (Total)	mg/L	0.0001		0.0004	0.0001	<0.0001	<0.0001	0.0026
Nickel (Total)	mg/L	0.0002		0.0008	0.0005	0.0009	0.0008	0.0010
Selenium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium (Total)	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005		0.00064	0.00047	0.00015	<0.00005	0.00016
Vanadium (Total)	mg/L	0.0001		0.0004	0.0006	0.0006	0.0001	0.0003
Chromium (VI)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		11.2	7.96	7.57	7.34	12.5
Cation Sum	meq/L	-		12.0	8.41	7.90	7.65	13.4
% Difference	%	-		3.42	2.73	2.16	2.06	3.15
Ion Ratio	-	-		0.934	0.947	0.958	0.960	0.939
Sodium Adsorption Ratio	-	-		1.68	0.699	1.52	2.06	4.00
TDS (Ion Sum Calc)	mg/L	1		611	423	406	398	742
TDS(calc.)/EC(actual)	-	-		0.552	0.563	0.538	0.529	0.544
Conductivity Calc	µmho/cm	-		1120	772	759	756	1340
Conductivity Calc / Conductivity	-	-		1.01	1.03	1.01	1.00	0.979

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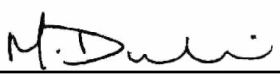
			Client I.D.	SW-2	SW-4	SW-14	SW-18	WPCP Effluent
			Sample I.D.	24-017347-6	24-017347-7	24-017347-8	24-017347-9	24-017347-10
			Date Collected	2024-06-11	2024-06-11	2024-06-11	2024-06-11	2024-06-11
Parameter	**Units**	**R.L.**		-	-	-	-	-
Langelier Index(25°C)	-	-		1.04	1.37	0.783	0.220	0.446
Saturation pH (25°C)	-	-		6.81	6.87	7.12	7.27	7.23
pH (Client Data)	pH units	-		7.21	8.58	8.03		
Temperature (Client Data)	°C	-		12.2	15.6	16.5		



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Data Specialist

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	Client I.D.		CP1	CP2	DUP
	Sample I.D.		24-017347-11	24-017347-12	24-017347-13
	Date Collected		2024-06-11	2024-06-11	2024-06-11
Parameter	Units	R.L.	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	97	327	136
Conductivity @25°C	uS/cm	1	674	845	449
pH @25°C	pH units	-	8.71	8.28	7.53
Colour	TCU	2	48	15	20
Turbidity	NTU	0.1	3.4	3.2	2.1
Fluoride	mg/L	0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	136	76.3	52.0
Nitrate (N)	mg/L	0.05	<0.05	0.55	0.20
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1	14	12	13
BOD5	mg/L	3	3	<3	3
Total Suspended Solids	mg/L	3	7	10	7
Phosphorus (Total)	mg/L	0.01	0.05	0.04	0.03
Total Kjeldahl Nitrogen	mg/L	0.1	1.5	1.1	1.2
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.06	0.78	0.67
Ammonia (N)-unionized	mg/L	0.01	0.01	0.08	0.04
Dissolved Organic Carbon	mg/L	0.2	12.8	5.0	8.1
Tannin & Lignin	mg/L	0.5	0.7	<0.5	
Cyanide (WAD)	mg/L	0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001
COD	mg/L	5	64	20	30

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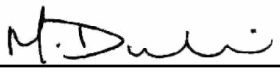
Parameter	Units	R.L.	Client I.D.	CP1	CP2	DUP
			Sample I.D.	24-017347-11	24-017347-12	24-017347-13
			Date Collected	2024-06-11	2024-06-11	2024-06-11
				-	-	-
Aluminum	mg/L	0.01		0.02	0.08	0.04
Hardness (as CaCO3)	mg/L	0.02		85.9	394	171
Aluminum (Total)	mg/L	0.01		0.03	0.24	0.03
Barium (Total)	mg/L	0.001		0.019	0.047	0.032
Boron (Total)	mg/L	0.005		0.082	0.014	0.015
Calcium (Total)	mg/L	0.02		23.7	142	53.0
Iron (Total)	mg/L	0.005		0.142	0.424	0.069
Magnesium (Total)	mg/L	0.02		6.48	9.80	9.39
Manganese (Total)	mg/L	0.001		0.055	0.261	0.026
Phosphorus (Total)	mg/L	0.1		<0.1	<0.1	<0.1
Potassium (Total)	mg/L	0.1		46.5	1.0	1.4
Sodium (Total)	mg/L	0.2		76.2	45.9	28.6
Strontium (Total)	mg/L	0.001		0.185	0.385	0.189
Tin (Total)	mg/L	0.05		<0.05	<0.05	<0.05
Titanium (Total)	mg/L	0.005		<0.005	0.011	<0.005
Zinc (Total)	mg/L	0.005		<0.005	<0.005	<0.005
Antimony (Total)	mg/L	0.0001		0.0004	0.0003	0.0004
Arsenic (Total)	mg/L	0.0001		0.0008	0.0004	0.0003
Beryllium (Total)	mg/L	0.0001		<0.0001	<0.0001	<0.0001
Cadmium (Total)	mg/L	0.000015		<0.000015	<0.000015	<0.000015
Chromium (Total)	mg/L	0.001		<0.001	<0.001	<0.001



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			Client I.D.	CP1	CP2	DUP
			Sample I.D.	24-017347-11	24-017347-12	24-017347-13
			Date Collected	2024-06-11	2024-06-11	2024-06-11
Parameter	Units	R.L.		-	-	-
Cobalt (Total)	mg/L	0.0001		0.0002	0.0006	0.0002
Copper (Total)	mg/L	0.0001		0.0009	0.0009	0.0005
Lead (Total)	mg/L	0.00002		0.00005	0.00019	0.00014
Molybdenum (Total)	mg/L	0.0001		0.0007	0.0001	0.0002
Nickel (Total)	mg/L	0.0002		0.0016	0.0007	0.0006
Selenium (Total)	mg/L	0.001		<0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001		<0.0001	<0.0001	<0.0001
Thallium (Total)	mg/L	0.00005		<0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005		0.00013	0.00041	0.00038
Vanadium (Total)	mg/L	0.0001		0.0004	0.0006	0.0003
Chromium (VI)	mg/L	0.001		<0.001	<0.001	<0.001
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		6.05	8.98	4.46
Cation Sum	meq/L	-		6.23	9.93	4.71
% Difference	%	-		1.47	5.04	2.73
Ion Ratio	-	-		0.971	0.904	0.947
Sodium Adsorption Ratio	-	-		3.58	1.01	0.953
TDS (Ion Sum Calc)	mg/L	1		361	486	240
TDS(calc.)/EC(actual)	-	-		0.535	0.575	0.533
Conductivity Calc	µmho/cm	-		689	893	466
Conductivity Calc / Conductivity	-	-		1.02	1.06	1.04

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			Client I.D.	CP1	CP2	DUP
			Sample I.D.	24-017347-11	24-017347-12	24-017347-13
			Date Collected	2024-06-11	2024-06-11	2024-06-11
Parameter	**Units**	**R.L.**		-	-	-
Langelier Index(25°C)	-	-		0.619	1.48	-0.0452
Saturation pH (25°C)	-	-		8.09	6.80	7.58
pH (Client Data)	pH units	-				8.34
Temperature (Client Data)	°C	-				16.8

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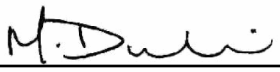
			Client I.D.	SW-14	SW-18
			Sample I.D.	24-017347-8	24-017347-9
			Date Collected	2024-06-11	2024-06-11
Parameter	Units	R.L.		-	-
Acetone	µg/L	30		<30	<30
Benzene	µg/L	0.5		<0.5	<0.5
Bromodichloromethane	µg/L	2		<2	<2
Bromoform	µg/L	5		<5	<5
Bromomethane	µg/L	0.5		<0.5	<0.5
Carbon Tetrachloride	µg/L	0.2		<0.2	<0.2
Chlorobenzene	µg/L	0.5		<0.5	<0.5
Chloroform	µg/L	1		<1	<1
Chloromethane (Methyl Chloride)	µg/L	2		<2	<2
Dibromochloromethane	µg/L	2		<2	<2
Ethylene Dibromide	µg/L	0.2		<0.2	<0.2
Dichlorobenzene,1,2-	µg/L	0.5		<0.5	<0.5
Dichlorobenzene,1,3-	µg/L	0.5		<0.5	<0.5
Dichlorobenzene,1,4-	µg/L	0.5		<0.5	<0.5
Dichloroethane,1,1-	µg/L	0.5		<0.5	<0.5
Dichloroethane,1,2-	µg/L	0.5		<0.5	<0.5
Dichloroethylene,1,1-	µg/L	0.5		<0.5	<0.5
Dichloroethylene,1,2-cis-	µg/L	0.5		<0.5	<0.5
Dichloroethylene,1,2-trans-	µg/L	0.5		<0.5	<0.5
Dichloropropane,1,2-	µg/L	0.5		<0.5	<0.5
Dichloropropene,1,3-cis-	µg/L	0.5		<0.5	<0.5



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			Client I.D.	SW-14	SW-18
			Sample I.D.	24-017347-8	24-017347-9
			Date Collected	2024-06-11	2024-06-11
Parameter	Units	R.L.		-	-
Dichloropropene,1,3-trans-	µg/L	0.5		<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5
Dichloromethane (Methylene Chloride)	µg/L	5		<5	<5
Methyl Ethyl Ketone	µg/L	2		<2	<2
Methyl Isobutyl Ketone	µg/L	20		<20	<20
Methyl tert-Butyl Ether (MTBE)	µg/L	2		<2	<2
Styrene	µg/L	0.5		<0.5	<0.5
Tetrachloroethane,1,1,1,2-	µg/L	0.5		<0.5	<0.5
Tetrachloroethane,1,1,2,2-	µg/L	0.5		<0.5	<0.5
Tetrachloroethylene	µg/L	0.5		<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5
Trichlorobenzene,1,2,4-	µg/L	0.5		<0.5	<0.5
Trichloroethane,1,1,1-	µg/L	0.5		<0.5	<0.5
Trichloroethane,1,1,2-	µg/L	0.5		<0.5	<0.5
Trichloroethylene	µg/L	0.5		<0.5	<0.5
Trichlorofluoromethane (Freon 11)	µg/L	5		<5	<5
Vinyl Chloride	µg/L	0.2		<0.2	<0.2
Xylene, m,p-	µg/L	1		<1	<1
Xylene, o-	µg/L	0.5		<0.5	<0.5

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-017354 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
112 Commerce Park Dr Unit L
Barrie, ON L4N 8W8

Attention: Kayla Pantaleo

DATE RECEIVED: 2024-Jun-12
DATE REPORTED: 2024-Jun-19
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS SW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Cond/pH/Alk Auto (Liquid)	2	OTTAWA	SBOUDREAU	2024-Jun-18	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
ICP/OES Total (Liquid)	2	OTTAWA	APRUDYVUS	2024-Jun-18	D-ICP-01	SM 3120B
ICP/OES (Liquid)	2	OTTAWA	TPRICE	2024-Jun-17	D-ICP-01	SM 3120B
Ammonia (Liquid)	2	KINGSTON	KDIBBITS	2024-Jun-17	NH3-001	SM 4500NH3
TSS (Liquid)	2	KINGSTON	MCLOSS	2024-Jun-14	TSS-001	SM 2540D
Turbidity (Liquid)	2	OTTAWA	PLUSSIER	2024-Jun-14	A-TURB-01	SM 2130B

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

			Client I.D.	Nearshore 1	Nearshore 2
			Sample I.D.	24-017354-1	24-017354-2
			Date Collected	2024-06-11	2024-06-11
Parameter	Units	R.L.		-	-
pH @25°C	pH units	-		8.66	8.15
Turbidity	NTU	0.1		1.0	0.7
Total Suspended Solids	mg/L	3		6	<3
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		<0.05	0.85
Iron	mg/L	0.005		0.025	0.020
Iron (Total)	mg/L	0.005		0.050	0.047
pH (Client Data)	pH units	-		8.68	8.51
Temperature (Client Data)	°C	-		15.5	15.3

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-017477 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Deyonte Levene

DATE RECEIVED: 2024-Jun-13
DATE REPORTED: 2024-Jun-28
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay OPS LPC
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	PCURIEL	2024-Jun-14	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	JWOLFE2	2024-Jun-19	BOD-001	SM 5210B
COD (Liquid)	1	KINGSTON	EHINCH	2024-Jun-20	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SLOZO	2024-Jun-17	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
DOC/DIC (Liquid)	1	OTTAWA	VKASYAN	2024-Jun-19	C-OC-01	EPA 415.2
Ion Balance (Calc.)	1	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	1	OTTAWA	STAILLON	2024-Jun-18	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	1	OTTAWA	AOZKAYMAK	2024-Jun-17	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	APRUDYVUS	2024-Jun-18	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2024-Jun-17	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	1	KINGSTON	JYEARWOOD	2024-Jun-19	NH3-001	SM 4500NH3
Phenols (Liquid)	1	KINGSTON	EHINCH	2024-Jun-27	PHEN-01	MECP E3179
TP & TKN (Liquid)	1	KINGSTON	KDIBBITS	2024-Jun-25	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2024-Jun-18	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

Michelle Dubien
Data Specialist

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		Client I.D.	LPC #1
		Sample I.D.	24-017477-1
		Date Collected	2024-06-12
Parameter	**Units**	**R.L.**	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	661
TDS (Calc. from Cond.)	mg/L	3	972
Conductivity @25°C	uS/cm	1	1770
pH @25°C	pH units	-	7.04
Fluoride	mg/L	0.1	<0.7
Chloride	mg/L	0.5	159
Nitrate (N)	mg/L	0.05	<0.40
Nitrite (N)	mg/L	0.05	<0.40
Sulphate	mg/L	1	30
BOD5	mg/L	3	6
Phosphorus (Total)	mg/L	0.01	0.02
Total Kjeldahl Nitrogen	mg/L	0.1	21.7
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	19.7
Dissolved Organic Carbon	mg/L	0.2	11.7
Phenolics	mg/L	0.001	<0.001
COD	mg/L	5	64
Hardness (as CaCO3)	mg/L	0.02	611
Aluminum (Total)	mg/L	0.01	0.10
Barium (Total)	mg/L	0.001	0.363
Beryllium (Total)	mg/L	0.001	<0.001
Boron (Total)	mg/L	0.005	0.391

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			Client I.D.	LPC #1
			Sample I.D.	24-017477-1
			Date Collected	2024-06-12
Parameter	Units	R.L.		-
Cadmium (Total)	mg/L	0.005		<0.005
Calcium (Total)	mg/L	0.02		188
Chromium (Total)	mg/L	0.002		0.002
Cobalt (Total)	mg/L	0.005		<0.005
Copper (Total)	mg/L	0.002		<0.002
Iron (Total)	mg/L	0.005		30.7
Lead (Total)	mg/L	0.02		<0.02
Magnesium (Total)	mg/L	0.02		34.4
Manganese (Total)	mg/L	0.001		0.455
Molybdenum (Total)	mg/L	0.01		<0.01
Nickel (Total)	mg/L	0.01		<0.01
Phosphorus (Total)	mg/L	0.1		<0.1
Potassium (Total)	mg/L	0.1		19.0
Silver (Total)	mg/L	0.005		<0.005
Sodium (Total)	mg/L	0.2		116
Strontium (Total)	mg/L	0.001		0.703
Tin (Total)	mg/L	0.05		<0.05
Titanium (Total)	mg/L	0.005		<0.005
Vanadium (Total)	mg/L	0.005		<0.005
Zinc (Total)	mg/L	0.005		0.012
Antimony (Total)	mg/L	0.0005		0.0005

Michelle Dubien
Data Specialist

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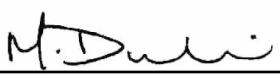
		Client I.D.	LPC #1
		Sample I.D.	24-017477-1
		Date Collected	2024-06-12
Parameter	**Units**	**R.L.**	-
Arsenic (Total)	mg/L	0.0005	0.0014
Selenium (Total)	mg/L	0.005	<0.005
Thallium (Total)	mg/L	0.0003	<0.0003
Uranium (Total)	mg/L	0.0003	<0.0003
Chromium (VI)	mg/L	0.01	<0.01
Mercury	mg/L	0.00002	<0.00002
Anion Sum	meq/L	-	18.3
Cation Sum	meq/L	-	19.4
% Difference	%	-	2.93
Ion Ratio	-	-	0.943
Sodium Adsorption Ratio	-	-	2.05
TDS (Ion Sum Calc)	mg/L	1	975
TDS(calc.)/EC(actual)	-	-	0.551
Conductivity Calc	µmho/cm	-	1580
Conductivity Calc / Conductivity	-	-	0.889
Langelier Index(25°C)	-	-	0.632
Saturation pH (25°C)	-	-	6.41
pH (Client Data)	pH units	-	7.54
Temperature (Client Data)	°C	-	10.6



Michelle Dubien
Data Specialist

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	Client I.D.		LPC #1
	Sample I.D.		24-017477-1
	Date Collected		2024-06-12
Parameter	**Units**	**R.L.**	-
Benzene	µg/L	0.5	1.9
Ethylbenzene	µg/L	0.5	<0.5
Toluene	µg/L	0.5	<0.5
Xylene, m,p-	µg/L	1	<1
Xylene, m,p,o-	µg/L	1.1	<1.1
Xylene, o-	µg/L	0.5	<0.5

Elevated RLs due to sample matrix interferences

Michelle Dubien
Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-017477 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Deyonte Levene

DATE RECEIVED: 2024-Jun-13
DATE REPORTED: 2024-Jun-28
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay OPS LPC
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	PCURIEL	2024-Jun-14	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	JWOLFE2	2024-Jun-19	BOD-001	SM 5210B
COD (Liquid)	1	KINGSTON	EHINCH	2024-Jun-20	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SLOZO	2024-Jun-17	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
DOC/DIC (Liquid)	1	OTTAWA	VKASYAN	2024-Jun-19	C-OC-01	EPA 415.2
Ion Balance (Calc.)	1	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	1	OTTAWA	STAILLON	2024-Jun-18	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	1	OTTAWA	AOZKAYMAK	2024-Jun-17	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	APRUDYVUS	2024-Jun-18	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2024-Jun-17	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	1	KINGSTON	JYEARWOOD	2024-Jun-19	NH3-001	SM 4500NH3
Phenols (Liquid)	1	KINGSTON	EHINCH	2024-Jun-27	PHEN-01	MECP E3179
TP & TKN (Liquid)	1	KINGSTON	KDIBBITS	2024-Jun-25	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2024-Jun-18	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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		Client I.D.	LPC #1
		Sample I.D.	24-017477-1
		Date Collected	2024-06-12
Parameter	**Units**	**R.L.**	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	661
TDS (Calc. from Cond.)	mg/L	3	972
Conductivity @25°C	uS/cm	1	1770
pH @25°C	pH units	-	7.04
Fluoride	mg/L	0.1	<0.7
Chloride	mg/L	0.5	159
Nitrate (N)	mg/L	0.05	<0.40
Nitrite (N)	mg/L	0.05	<0.40
Sulphate	mg/L	1	30
BOD5	mg/L	3	6
Phosphorus (Total)	mg/L	0.01	0.02
Total Kjeldahl Nitrogen	mg/L	0.1	21.7
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	19.7
Dissolved Organic Carbon	mg/L	0.2	11.7
Phenolics	mg/L	0.001	<0.001
COD	mg/L	5	64
Hardness (as CaCO3)	mg/L	0.02	611
Aluminum (Total)	mg/L	0.01	0.10
Barium (Total)	mg/L	0.001	0.363
Beryllium (Total)	mg/L	0.001	<0.001
Boron (Total)	mg/L	0.005	0.391

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			Client I.D.	LPC #1
			Sample I.D.	24-017477-1
			Date Collected	2024-06-12
Parameter	Units	R.L.		-
Cadmium (Total)	mg/L	0.005		<0.005
Calcium (Total)	mg/L	0.02		188
Chromium (Total)	mg/L	0.002		0.002
Cobalt (Total)	mg/L	0.005		<0.005
Copper (Total)	mg/L	0.002		<0.002
Iron (Total)	mg/L	0.005		30.7
Lead (Total)	mg/L	0.02		<0.02
Magnesium (Total)	mg/L	0.02		34.4
Manganese (Total)	mg/L	0.001		0.455
Molybdenum (Total)	mg/L	0.01		<0.01
Nickel (Total)	mg/L	0.01		<0.01
Phosphorus (Total)	mg/L	0.1		<0.1
Potassium (Total)	mg/L	0.1		19.0
Silver (Total)	mg/L	0.005		<0.005
Sodium (Total)	mg/L	0.2		116
Strontium (Total)	mg/L	0.001		0.703
Tin (Total)	mg/L	0.05		<0.05
Titanium (Total)	mg/L	0.005		<0.005
Vanadium (Total)	mg/L	0.005		<0.005
Zinc (Total)	mg/L	0.005		0.012
Antimony (Total)	mg/L	0.0005		0.0005

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Data Specialist

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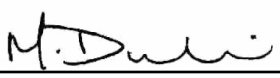
		Client I.D.	LPC #1
		Sample I.D.	24-017477-1
		Date Collected	2024-06-12
Parameter	**Units**	**R.L.**	-
Arsenic (Total)	mg/L	0.0005	0.0014
Selenium (Total)	mg/L	0.005	<0.005
Thallium (Total)	mg/L	0.0003	<0.0003
Uranium (Total)	mg/L	0.0003	<0.0003
Chromium (VI)	mg/L	0.01	<0.01
Mercury	mg/L	0.00002	<0.00002
Anion Sum	meq/L	-	18.3
Cation Sum	meq/L	-	19.4
% Difference	%	-	2.93
Ion Ratio	-	-	0.943
Sodium Adsorption Ratio	-	-	2.05
TDS (Ion Sum Calc)	mg/L	1	975
TDS(calc.)/EC(actual)	-	-	0.551
Conductivity Calc	µmho/cm	-	1580
Conductivity Calc / Conductivity	-	-	0.889
Langelier Index(25°C)	-	-	0.632
Saturation pH (25°C)	-	-	6.41
pH (Client Data)	pH units	-	7.54
Temperature (Client Data)	°C	-	10.6



Michelle Dubien
Data Specialist

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	Client I.D.		LPC #1
	Sample I.D.		24-017477-1
	Date Collected		2024-06-12
Parameter	**Units**	**R.L.**	-
Benzene	µg/L	0.5	1.9
Ethylbenzene	µg/L	0.5	<0.5
Toluene	µg/L	0.5	<0.5
Xylene, m,p-	µg/L	1	<1
Xylene, m,p,o-	µg/L	1.1	<1.1
Xylene, o-	µg/L	0.5	<0.5

Elevated RLs due to sample matrix interferences

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Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-023502 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Aug-01
DATE REPORTED: 2024-Aug-12
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Lindsay OPS GW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	16	OTTAWA	PCURIEL	2024-Aug-02	A-IC-01	SM 4110B
BOD5 (Liquid)	16	KINGSTON	DCASSIDY	2024-Aug-07	BOD-001	SM 5210B
COD (Liquid)	16	KINGSTON	EHINCH	2024-Aug-06	COD-001	SM 5220D
Colour (Liquid)	16	OTTAWA	STAILLON	2024-Aug-07	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	16	OTTAWA	VKASYAN	2024-Aug-06	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	16	KINGSTON	JMACINNES	2024-Aug-06	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	16	OTTAWA	VKASYAN	2024-Aug-07	C-OC-01	EPA 415.2
Ion Balance (Calc.)	16	OTTAWA	STAILLON		CP-028	MECP E3196
Chromium VI (Liquid)	16	OTTAWA	STAILLON	2024-Aug-09	D-CRVI-01	MECP E3056
ICP/MS (Liquid)	16	OTTAWA	TPRICE	2024-Aug-08	D-ICPMS-01	EPA 200.8
ICP/OES (Liquid)	16	OTTAWA	APRUDYVUS	2024-Aug-06	D-ICP-01	SM 3120B
Mercury (Liquid)	16	OTTAWA	TBENNETT	2024-Aug-07	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	16	KINGSTON	JYEARWOOD	2024-Aug-08	NH3-001	SM 4500NH3
PCB's (Liquid)	16	KINGSTON	CSUMMERHAYS	2024-Aug-07	PCB-001	EPA 8081
Phenols (Liquid)	16	KINGSTON	EHINCH	2024-Aug-07	PHEN-01	MECP E3179
TP & TKN (Liquid)	16	KINGSTON	KDIBBITS	2024-Aug-07	TPTKN-001	MECP E3516.2
TSS (Liquid)	16	KINGSTON	DCASSIDY	2024-Aug-06	TSS-001	SM 2540D
Turbidity (Liquid)	16	OTTAWA	PLUSSIER	2024-Aug-07	A-TURB-01	SM 2130B
VOC-Volatiles Full (Water)	16	RICHMOND_HILL	FLENA	2024-Aug-09	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
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Data Specialist

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			Client I.D.	MW11-90	MW32-93-I	MW43-93-I	MW43-93-II	MW44-93-II
			Sample I.D.	24-023502-1	24-023502-2	24-023502-3	24-023502-4	24-023502-5
			Date Collected	2024-07-29	2024-07-29	2024-07-30	2024-07-30	2024-07-29
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		383	272	266	603	428
TDS (Calc. from Cond.)	mg/L	3		570	509	450	679	1140
Conductivity @25°C	uS/cm	1		1060	956	853	1260	2060
pH @25°C	pH units	-		7.82	7.85	7.93	7.53	7.66
Colour	TCU	2		<2	<2	<2	<2	<2
Turbidity	NTU	0.1		26.7	181	124	127	209
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		105	117	88.4	36.2	420
Nitrate (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	3.34
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		31	49	52	57	29
BOD5	mg/L	3		<3	4	<3	11	<3
Total Suspended Solids	mg/L	3		7	233	76	231	395
Phosphorus (Total)	mg/L	0.01		<0.01	0.19	0.05	0.06	0.23
Total Kjeldahl Nitrogen	mg/L	0.1		0.9	0.8	0.7	0.7	0.8
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.71	0.57	0.58	0.25	0.15
Ammonia (N)-unionized	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		4.1	1.3	1.3	4.5	1.2
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		0.002	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		158	40	10	22	36

Michelle Dubien
Data Specialist

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	Client I.D.	MW11-90	MW32-93-I	MW43-93-I	MW43-93-II	MW44-93-II
	Sample I.D.	24-023502-1	24-023502-2	24-023502-3	24-023502-4	24-023502-5
	Date Collected	2024-07-29	2024-07-29	2024-07-30	2024-07-30	2024-07-29
Parameter	Units R.L.	-	-	-	-	-
Hardness (as CaCO3)	mg/L 0.02	541	475	445	710	628
Aluminum	mg/L 0.01	0.04	0.05	0.04	0.08	0.09
Barium	mg/L 0.001	0.374	0.162	0.075	0.190	0.144
Boron	mg/L 0.005	0.113	0.050	0.067	0.016	0.015
Calcium	mg/L 0.02	143	125	104	252	227
Iron	mg/L 0.005	1.43	0.493	0.359	0.407	0.082
Magnesium	mg/L 0.02	44.6	39.5	45.2	19.4	15.0
Manganese	mg/L 0.001	0.032	0.014	0.010	0.025	0.008
Phosphorus	mg/L 0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L 0.1	4.5	2.9	3.3	1.3	1.7
Sodium	mg/L 0.2	27.1	21.5	11.1	29.7	222
Strontium	mg/L 0.001	1.49	0.931	1.20	0.541	0.598
Tin	mg/L 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L 0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0002
Arsenic	mg/L 0.0001	<0.0001	<0.0001	<0.0001	0.0004	0.0002
Beryllium	mg/L 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L 0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L 0.0001	<0.0001	<0.0001	<0.0001	0.0004	<0.0001

Michelle Dubien
Data Specialist

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			Client I.D.	MW11-90	MW32-93-I	MW43-93-I	MW43-93-II	MW44-93-II
			Sample I.D.	24-023502-1	24-023502-2	24-023502-3	24-023502-4	24-023502-5
			Date Collected	2024-07-29	2024-07-29	2024-07-30	2024-07-30	2024-07-29
Parameter	**Units**	**R.L.**		-	-	-	-	-
Copper	mg/L	0.0001		0.0004	0.0003	0.0002	0.0006	0.0011
Lead	mg/L	0.00002		0.00003	0.00006	0.00003	0.00005	0.00017
Molybdenum	mg/L	0.0001		<0.0001	0.0002	<0.0001	0.0002	0.0002
Nickel	mg/L	0.0002		0.0014	<0.0002	<0.0002	0.0010	0.0005
Selenium	mg/L	0.001		0.001	<0.001	<0.001	0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	0.00068	0.00053
Vanadium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	0.0002	0.0002
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		11.2	9.76	8.90	14.3	21.2
Cation Sum	meq/L	-		12.3	10.6	9.55	15.6	22.3
% Difference	%	-		4.29	4.07	3.57	4.32	2.36
Ion Ratio	-	-		0.918	0.922	0.931	0.917	0.954
Sodium Adsorption Ratio	-	-		0.506	0.429	0.228	0.485	3.86
TDS (Ion Sum Calc)	mg/L	1		587	520	465	759	1190
TDS(calc.)/EC(actual)	-	-		0.551	0.544	0.545	0.604	0.576
Conductivity Calc	µmho/cm	-		1080	980	880	1280	2090
Conductivity Calc / Conductivity	-	-		1.02	1.03	1.03	1.02	1.01
Langelier Index(25°C)	-	-		1.09	0.920	0.910	1.23	1.13

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Data Specialist

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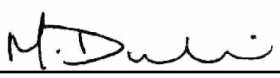
			Client I.D.	MW11-90	MW32-93-I	MW43-93-I	MW43-93-II	MW44-93-II
			Sample I.D.	24-023502-1	24-023502-2	24-023502-3	24-023502-4	24-023502-5
			Date Collected	2024-07-29	2024-07-29	2024-07-30	2024-07-30	2024-07-29
Parameter	**Units**	**R.L.**		-	-	-	-	-
Saturation pH (25°C)	-	-		6.73	6.93	7.02	6.30	6.53
pH (Client Data)	pH units	-		7.69	7.9	7.16	6.93	7.79
Temperature (Client Data)	°C	-		12.2	10.2	10.6	15.5	14.9



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Parameter	Units	R.L.	Client I.D.	MW45-93	MW53-98	MW55-98-I	MW55-98-II	MW56-02-I
			Sample I.D.	24-023502-6	24-023502-7	24-023502-8	24-023502-9	24-023502-10
			Date Collected	2024-07-30	2024-07-29	2024-07-30	2024-07-30	2024-07-29
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		396	369	265	242	257
TDS (Calc. from Cond.)	mg/L	3		657	1640	1020	445	523
Conductivity @25°C	uS/cm	1		1220	2950	1860	844	982
pH @25°C	pH units	-		7.90	7.62	7.89	7.95	8.01
Colour	TCU	2		<2	<2	<2	<2	<2
Turbidity	NTU	0.1		325	42.6	90.7	15.7	27.8
Fluoride	mg/L	0.1		<0.1	<0.1	0.7	0.1	<0.1
Chloride	mg/L	0.5		150	767	454	109	145
Nitrate (N)	mg/L	0.05		0.41	<0.05	0.10	<0.05	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		13	31	22	38	40
BOD5	mg/L	3		<3	<3	5	<3	<3
Total Suspended Solids	mg/L	3		323	43	117	16	37
Phosphorus (Total)	mg/L	0.01		0.10	0.01	0.05	0.02	0.02
Total Kjeldahl Nitrogen	mg/L	0.1		1.0	1.1	3.5	0.4	1.5
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.83	0.82	3.09	0.29	0.80
Ammonia (N)-unionized	mg/L	0.01		0.02	<0.01	0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		1.4	0.8	0.6	1.3	1.5
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	0.002	<0.001
COD	mg/L	5		14	27	28	6	14

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	Client I.D.	MW45-93	MW53-98	MW55-98-I	MW55-98-II	MW56-02-I
	Sample I.D.	24-023502-6	24-023502-7	24-023502-8	24-023502-9	24-023502-10
	Date Collected	2024-07-30	2024-07-29	2024-07-30	2024-07-30	2024-07-29
Parameter	Units R.L.	-	-	-	-	-
Hardness (as CaCO3)	mg/L 0.02	330	1090	505	436	488
Aluminum	mg/L 0.01	0.04	0.09	0.03	0.03	0.03
Barium	mg/L 0.001	0.074	1.47	1.10	0.286	0.201
Boron	mg/L 0.005	0.011	0.063	0.716	0.105	0.101
Calcium	mg/L 0.02	120	341	88.2	87.5	108
Iron	mg/L 0.005	0.016	2.14	0.100	0.951	0.820
Magnesium	mg/L 0.02	7.28	57.9	69.1	52.8	52.8
Manganese	mg/L 0.001	0.001	0.151	0.009	0.016	0.018
Phosphorus	mg/L 0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L 0.1	1.2	4.4	11.6	3.5	4.7
Sodium	mg/L 0.2	154	200	183	13.7	21.8
Strontium	mg/L 0.001	0.269	2.22	8.41	1.54	1.90
Tin	mg/L 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L 0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L 0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Beryllium	mg/L 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L 0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0015

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			Client I.D.	MW45-93	MW53-98	MW55-98-I	MW55-98-II	MW56-02-I
			Sample I.D.	24-023502-6	24-023502-7	24-023502-8	24-023502-9	24-023502-10
			Date Collected	2024-07-30	2024-07-29	2024-07-30	2024-07-30	2024-07-29
Parameter	**Units**	**R.L.**		-	-	-	-	-
Copper	mg/L	0.0001		0.0010	0.0003	0.0003	0.0005	0.0003
Lead	mg/L	0.00002		0.00005	0.00004	<0.00002	0.00003	0.00002
Molybdenum	mg/L	0.0001		0.0002	<0.0001	<0.0001	0.0002	<0.0001
Nickel	mg/L	0.0002		0.0005	0.0004	<0.0002	<0.0002	<0.0002
Selenium	mg/L	0.001		<0.001	0.001	0.006	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00029	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	0.0001		0.0002	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		12.5	29.7	18.6	8.70	10.1
Cation Sum	meq/L	-		13.4	30.8	18.8	9.50	11.0
% Difference	%	-		3.64	1.96	0.407	4.39	4.35
Ion Ratio	-	-		0.930	0.962	0.992	0.916	0.917
Sodium Adsorption Ratio	-	-		3.69	2.64	3.55	0.285	0.430
TDS (Ion Sum Calc)	mg/L	1		687	1630	993	451	528
TDS(calc.)/EC(actual)	-	-		0.564	0.551	0.534	0.535	0.538
Conductivity Calc	µmho/cm	-		1220	2890	1870	878	1020
Conductivity Calc / Conductivity	-	-		1.00	0.980	1.00	1.04	1.04
Langelier Index(25°C)	-	-		1.09	1.21	0.756	0.813	0.993



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Data Specialist

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		Client I.D.	MW45-93	MW53-98	MW55-98-I	MW55-98-II	MW56-02-I
		Sample I.D.	24-023502-6	24-023502-7	24-023502-8	24-023502-9	24-023502-10
		Date Collected	2024-07-30	2024-07-29	2024-07-30	2024-07-30	2024-07-29
Parameter	**Units**	**R.L.**	-	-	-	-	-
Saturation pH (25°C)	-	-	6.81	6.41	7.13	7.14	7.02
pH (Client Data)	pH units	-	7.91	7.59	7.29	7.24	7.82
Temperature (Client Data)	°C	-	12.8	10.6	10.7	8.8	9.1

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Parameter	Units	R.L.	Client I.D.	MW58-I	MW61-10-1	MW61-10-2	MW61-17-1	MW62-17-2
			Sample I.D.	24-023502-11	24-023502-12	24-023502-13	24-023502-14	24-023502-15
			Date Collected	2024-07-29	2024-07-29	2024-07-29	2024-07-29	2024-07-29
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		519	436	439	440	392
TDS (Calc. from Cond.)	mg/L	3		751	789	776	785	557
Conductivity @25°C	uS/cm	1		1380	1450	1430	1440	1040
pH @25°C	pH units	-		7.66	7.76	7.74	7.71	7.90
Colour	TCU	2		2	2	<2	3	<2
Turbidity	NTU	0.1		32.7	9.0	968	165	11.2
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		103	188	204	184	74.0
Nitrate (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		100	61	97	63	75
BOD5	mg/L	3		<3	<3	<3	<3	<3
Total Suspended Solids	mg/L	3		53	7	2580	788	15
Phosphorus (Total)	mg/L	0.01		0.15	0.02	0.13	0.03	0.02
Total Kjeldahl Nitrogen	mg/L	0.1		0.7	1.1	0.6	1.5	0.9
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.25	0.52	0.35	0.95	0.60
Ammonia (N)-unionized	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		4.1	5.9	1.5	6.9	4.4
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		25	32	25	29	142



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	Client I.D.	MW58-I	MW61-10-1	MW61-10-2	MW61-17-1	MW62-17-2
	Sample I.D.	24-023502-11	24-023502-12	24-023502-13	24-023502-14	24-023502-15
	Date Collected	2024-07-29	2024-07-29	2024-07-29	2024-07-29	2024-07-29
Parameter	**Units**	**R.L.**	-	-	-	-	-
Hardness (as CaCO3)	mg/L	0.02	664	688	733	663	542
Aluminum	mg/L	0.01	0.08	0.05	0.07	0.05	0.04
Barium	mg/L	0.001	0.142	0.508	0.195	0.501	0.241
Boron	mg/L	0.005	0.189	0.157	0.033	0.155	0.073
Calcium	mg/L	0.02	219	169	215	161	144
Iron	mg/L	0.005	0.051	0.884	0.980	0.863	0.696
Magnesium	mg/L	0.02	28.6	64.7	47.4	63.4	44.5
Manganese	mg/L	0.001	0.019	0.028	0.065	0.027	0.028
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	2.8	4.9	2.9	4.7	3.3
Sodium	mg/L	0.2	68.6	72.3	53.9	66.9	34.4
Strontium	mg/L	0.001	0.840	1.73	0.916	1.67	1.04
Tin	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005	<0.005	0.007	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001	0.0003	<0.0001	0.0003	<0.0001	<0.0001
Beryllium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015	<0.000015	<0.000015	0.000016	<0.000015	<0.000015
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0004	<0.0001	0.0013	<0.0001	<0.0001

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			Client I.D.	MW58-I	MW61-10-1	MW61-10-2	MW61-17-1	MW62-17-2
			Sample I.D.	24-023502-11	24-023502-12	24-023502-13	24-023502-14	24-023502-15
			Date Collected	2024-07-29	2024-07-29	2024-07-29	2024-07-29	2024-07-29
Parameter	**Units**	**R.L.**		-	-	-	-	-
Copper	mg/L	0.0001		0.0012	0.0004	0.0006	0.0004	0.0003
Lead	mg/L	0.00002		0.00007	0.00003	0.00005	<0.00002	0.00002
Molybdenum	mg/L	0.0001		0.0003	<0.0001	0.0003	<0.0001	<0.0001
Nickel	mg/L	0.0002		0.0023	0.0056	0.0015	0.0055	0.0019
Selenium	mg/L	0.001		0.002	0.002	0.002	0.002	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00096	<0.00005	0.00044	<0.00005	<0.00005
Vanadium	mg/L	0.0001		0.0001	0.0005	0.0001	0.0005	0.0002
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		15.4	15.3	16.6	15.3	11.5
Cation Sum	meq/L	-		16.4	17.1	17.2	16.4	12.5
% Difference	%	-		3.19	5.73	1.77	3.60	4.23
Ion Ratio	-	-		0.938	0.892	0.965	0.931	0.919
Sodium Adsorption Ratio	-	-		1.16	1.20	0.866	1.13	0.642
TDS (Ion Sum Calc)	mg/L	1		833	823	886	810	612
TDS(calc.)/EC(actual)	-	-		0.603	0.568	0.621	0.561	0.588
Conductivity Calc	µmho/cm	-		1400	1480	1540	1450	1080
Conductivity Calc / Conductivity	-	-		1.01	1.02	1.08	1.00	1.04
Langelier Index(25°C)	-	-		1.22	1.13	1.22	1.07	1.18

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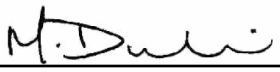
		Client I.D.	MW58-I	MW61-10-1	MW61-10-2	MW61-17-1	MW62-17-2
		Sample I.D.	24-023502-11	24-023502-12	24-023502-13	24-023502-14	24-023502-15
		Date Collected	2024-07-29	2024-07-29	2024-07-29	2024-07-29	2024-07-29
Parameter	**Units**	**R.L.**	-	-	-	-	-
Saturation pH (25°C)	-	-	6.44	6.63	6.52	6.64	6.72
pH (Client Data)	pH units	-	7.63	7.66	7.69	7.64	7.77
Temperature (Client Data)	°C	-	14	10.3	12.7	10.8	10.2



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			Client I.D.	MW62-17-3
			Sample I.D.	24-023502-16
			Date Collected	2024-07-29
Parameter	Units	R.L.		-
Alkalinity(CaCO3) to pH4.5	mg/L	5		446
TDS (Calc. from Cond.)	mg/L	3		555
Conductivity @25°C	uS/cm	1		1040
pH @25°C	pH units	-		7.86
Colour	TCU	2		<2
Turbidity	NTU	0.1		6.3
Fluoride	mg/L	0.1		<0.1
Chloride	mg/L	0.5		49.8
Nitrate (N)	mg/L	0.05		0.13
Nitrite (N)	mg/L	0.05		<0.05
Sulphate	mg/L	1		56
BOD5	mg/L	3		<3
Total Suspended Solids	mg/L	3		13
Phosphorus (Total)	mg/L	0.01		0.04
Total Kjeldahl Nitrogen	mg/L	0.1		0.3
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.13
Ammonia (N)-unionized	mg/L	0.01		<0.01
Dissolved Organic Carbon	mg/L	0.2		2.4
Cyanide (WAD)	mg/L	0.005		<0.005
Phenolics	mg/L	0.001		<0.001
COD	mg/L	5		8

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		Client I.D.	MW62-17-3
		Sample I.D.	24-023502-16
		Date Collected	2024-07-29
Parameter	Units	R.L.	-
Hardness (as CaCO3)	mg/L	0.02	498
Aluminum	mg/L	0.01	0.04
Barium	mg/L	0.001	0.248
Boron	mg/L	0.005	0.028
Calcium	mg/L	0.02	132
Iron	mg/L	0.005	0.009
Magnesium	mg/L	0.02	41.1
Manganese	mg/L	0.001	0.036
Phosphorus	mg/L	0.1	<0.1
Potassium	mg/L	0.1	4.2
Sodium	mg/L	0.2	59.4
Strontium	mg/L	0.001	0.695
Tin	mg/L	0.05	<0.05
Titanium	mg/L	0.005	<0.005
Zinc	mg/L	0.005	0.010
Antimony	mg/L	0.0001	0.0001
Arsenic	mg/L	0.0001	0.0004
Beryllium	mg/L	0.0001	<0.0001
Cadmium	mg/L	0.000015	<0.000015
Chromium	mg/L	0.001	<0.001
Cobalt	mg/L	0.0001	0.0004

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			Client I.D.	MW62-17-3
			Sample I.D.	24-023502-16
			Date Collected	2024-07-29
Parameter	Units	R.L.		-
Copper	mg/L	0.0001		0.0013
Lead	mg/L	0.00002		<0.00002
Molybdenum	mg/L	0.0001		0.0024
Nickel	mg/L	0.0002		0.0013
Selenium	mg/L	0.001		<0.001
Silver	mg/L	0.0001		<0.0001
Thallium	mg/L	0.00005		<0.00005
Uranium	mg/L	0.00005		0.00058
Vanadium	mg/L	0.0001		0.0003
Chromium (VI)	mg/L	0.01		<0.01
Mercury	mg/L	0.00002		<0.00002
Anion Sum	meq/L	-		11.5
Cation Sum	meq/L	-		12.7
% Difference	%	-		4.80
Ion Ratio	-	-		0.908
Sodium Adsorption Ratio	-	-		1.16
TDS (Ion Sum Calc)	mg/L	1		611
TDS(calc.)/EC(actual)	-	-		0.589
Conductivity Calc	µmho/cm	-		1070
Conductivity Calc / Conductivity	-	-		1.03
Langelier Index(25°C)	-	-		1.16

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		Client I.D.	MW62-17-3
		Sample I.D.	24-023502-16
		Date Collected	2024-07-29
Parameter	Units	R.L.	-
Saturation pH (25°C)	-	-	6.70
pH (Client Data)	pH units	-	7.12
Temperature (Client Data)	°C	-	15.6

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			Client I.D.	MW11-90	MW32-93-I	MW43-93-I	MW43-93-II	MW44-93-II
			Sample I.D.	24-023502-1	24-023502-2	24-023502-3	24-023502-4	24-023502-5
			Date Collected	2024-07-29	2024-07-29	2024-07-30	2024-07-30	2024-07-29
Parameter	Units	R.L.		-	-	-	-	-
Acetone	µg/L	30		<30	<30	<30	<30	<30
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	2		<2	<2	<2	<2	<2
Bromoform	µg/L	5		<5	<5	<5	<5	<5
Bromomethane	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Chloroform	µg/L	1		<1	<1	<1	<1	<1
Chloromethane (Methyl Chloride)	µg/L	2		<2	<2	<2	<2	<2
Dibromochloromethane	µg/L	2		<2	<2	<2	<2	<2
Ethylene Dibromide	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorobenzene,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene,1,3-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene,1,4-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethane,1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethane,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,2-cis-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,2-trans-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropane,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene,1,3-cis-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

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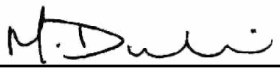
Parameter	Units	R.L.	Client I.D.	MW11-90	MW32-93-I	MW43-93-I	MW43-93-II	MW44-93-II
			Sample I.D.	24-023502-1	24-023502-2	24-023502-3	24-023502-4	24-023502-5
			Date Collected	2024-07-29	2024-07-29	2024-07-30	2024-07-30	2024-07-29
				-	-	-	-	-
Dichloropropene,1,3-trans-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloromethane (Methylene Chloride)	µg/L	5		<5	<5	<5	<5	<5
Methyl Ethyl Ketone	µg/L	2		<2	<2	<2	<2	<2
Methyl Isobutyl Ketone	µg/L	20		<20	<20	<20	<20	<20
Methyl tert-Butyl Ether (MTBE)	µg/L	2		<2	<2	<2	<2	<2
Styrene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane,1,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane,1,1,2,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichlorobenzene,1,2,4-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane,1,1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane (Freon 11)	µg/L	5		<5	<5	<5	<5	<5
Vinyl Chloride	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5



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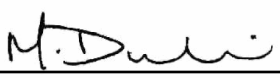
Parameter	Units	R.L.	Client I.D.	MW45-93	MW53-98	MW55-98-I	MW55-98-II	MW56-02-I
			Sample I.D.	24-023502-6	24-023502-7	24-023502-8	24-023502-9	24-023502-10
			Date Collected	2024-07-30	2024-07-29	2024-07-30	2024-07-30	2024-07-29
				-	-	-	-	-
Acetone	µg/L	30		<30	<30	<30	<30	<30
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	2		<2	<2	<2	<2	<2
Bromoform	µg/L	5		<5	<5	<5	<5	<5
Bromomethane	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Chloroform	µg/L	1		<1	<1	<1	<1	<1
Chloromethane (Methyl Chloride)	µg/L	2		<2	<2	<2	<2	<2
Dibromochloromethane	µg/L	2		<2	<2	<2	<2	<2
Ethylene Dibromide	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorobenzene,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene,1,3-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene,1,4-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethane,1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethane,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,2-cis-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,2-trans-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropane,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene,1,3-cis-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5



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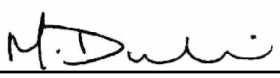
Parameter	Units	R.L.	Client I.D.	MW45-93	MW53-98	MW55-98-I	MW55-98-II	MW56-02-I
			Sample I.D.	24-023502-6	24-023502-7	24-023502-8	24-023502-9	24-023502-10
			Date Collected	2024-07-30	2024-07-29	2024-07-30	2024-07-30	2024-07-29
				-	-	-	-	-
Dichloropropene,1,3-trans-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloromethane (Methylene Chloride)	µg/L	5		<5	<5	<5	<5	<5
Methyl Ethyl Ketone	µg/L	2		<2	<2	<2	<2	<2
Methyl Isobutyl Ketone	µg/L	20		<20	<20	<20	<20	<20
Methyl tert-Butyl Ether (MTBE)	µg/L	2		<2	<2	<2	<2	<2
Styrene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane,1,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane,1,1,2,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichlorobenzene,1,2,4-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane,1,1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane (Freon 11)	µg/L	5		<5	<5	<5	<5	<5
Vinyl Chloride	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5



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			Client I.D.	MW58-I	MW61-10-1	MW61-10-2	MW61-17-1	MW62-17-2
			Sample I.D.	24-023502-11	24-023502-12	24-023502-13	24-023502-14	24-023502-15
			Date Collected	2024-07-29	2024-07-29	2024-07-29	2024-07-29	2024-07-29
Parameter	Units	R.L.		-	-	-	-	-
Acetone	µg/L	30		<30	<30	<30	<30	<30
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	2		<2	<2	<2	<2	<2
Bromoform	µg/L	5		<5	<5	<5	<5	<5
Bromomethane	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Chloroform	µg/L	1		<1	<1	<1	<1	<1
Chloromethane (Methyl Chloride)	µg/L	2		<2	<2	<2	<2	<2
Dibromochloromethane	µg/L	2		<2	<2	<2	<2	<2
Ethylene Dibromide	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorobenzene,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene,1,3-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene,1,4-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethane,1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethane,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,2-cis-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,2-trans-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropane,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene,1,3-cis-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

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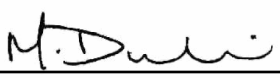
Parameter	Units	R.L.	Client I.D.	MW58-I	MW61-10-1	MW61-10-2	MW61-17-1	MW62-17-2
			Sample I.D.	24-023502-11	24-023502-12	24-023502-13	24-023502-14	24-023502-15
			Date Collected	2024-07-29	2024-07-29	2024-07-29	2024-07-29	2024-07-29
				-	-	-	-	-
Dichloropropene,1,3-trans-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Dichloromethane (Methylene Chloride)	µg/L	5		<5	<5	<5	<5	<5
Methyl Ethyl Ketone	µg/L	2		<2	<2	<2	<2	<2
Methyl Isobutyl Ketone	µg/L	20		<20	<20	<20	<20	<20
Methyl tert-Butyl Ether (MTBE)	µg/L	2		<2	<2	<2	<2	<2
Styrene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane,1,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane,1,1,2,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichlorobenzene,1,2,4-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane,1,1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane (Freon 11)	µg/L	5		<5	<5	<5	<5	<5
Vinyl Chloride	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5



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			Client I.D.	MW62-17-3
			Sample I.D.	24-023502-16
			Date Collected	2024-07-29
Parameter	Units	R.L.		-
Acetone	µg/L	30		<30
Benzene	µg/L	0.5		<0.5
Bromodichloromethane	µg/L	2		<2
Bromoform	µg/L	5		<5
Bromomethane	µg/L	0.5		<0.5
Carbon Tetrachloride	µg/L	0.2		<0.2
Chlorobenzene	µg/L	0.5		<0.5
Chloroform	µg/L	1		<1
Chloromethane (Methyl Chloride)	µg/L	2		<2
Dibromochloromethane	µg/L	2		<2
Ethylene Dibromide	µg/L	0.2		<0.2
Dichlorobenzene,1,2-	µg/L	0.5		<0.5
Dichlorobenzene,1,3-	µg/L	0.5		<0.5
Dichlorobenzene,1,4-	µg/L	0.5		<0.5
Dichloroethane,1,1-	µg/L	0.5		<0.5
Dichloroethane,1,2-	µg/L	0.5		<0.5
Dichloroethylene,1,1-	µg/L	0.5		<0.5
Dichloroethylene,1,2-cis-	µg/L	0.5		<0.5
Dichloroethylene,1,2-trans-	µg/L	0.5		<0.5
Dichloropropane,1,2-	µg/L	0.5		<0.5
Dichloropropene,1,3-cis-	µg/L	0.5		<0.5

Michelle Dubien
Data Specialist

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			Client I.D.	MW62-17-3
			Sample I.D.	24-023502-16
			Date Collected	2024-07-29
Parameter	Units	R.L.		-
Dichloropropene,1,3-trans-	µg/L	0.5		<0.5
Ethylbenzene	µg/L	0.5		<0.5
Dichloromethane (Methylene Chloride)	µg/L	5		<5
Methyl Ethyl Ketone	µg/L	2		<2
Methyl Isobutyl Ketone	µg/L	20		<20
Methyl tert-Butyl Ether (MTBE)	µg/L	2		<2
Styrene	µg/L	0.5		<0.5
Tetrachloroethane,1,1,1,2-	µg/L	0.5		<0.5
Tetrachloroethane,1,1,2,2-	µg/L	0.5		<0.5
Tetrachloroethylene	µg/L	0.5		<0.5
Toluene	µg/L	0.5		<0.5
Trichlorobenzene,1,2,4-	µg/L	0.5		<0.5
Trichloroethane,1,1,1-	µg/L	0.5		<0.5
Trichloroethane,1,1,2-	µg/L	0.5		<0.5
Trichloroethylene	µg/L	0.5		<0.5
Trichlorofluoromethane (Freon 11)	µg/L	5		<5
Vinyl Chloride	µg/L	0.2		<0.2
Xylene, m,p-	µg/L	1		<1
Xylene, o-	µg/L	0.5		<0.5

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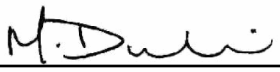
		Client I.D.	MW11-90	MW32-93-I	MW43-93-I	MW43-93-II	MW44-93-II
		Sample I.D.	24-023502-1	24-023502-2	24-023502-3	24-023502-4	24-023502-5
		Date Collected	2024-07-29	2024-07-29	2024-07-30	2024-07-30	2024-07-29
Parameter	**Units**	**R.L.**	-	-	-	-	-
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Identification Comment	-	-	-	-	-	-	-

		Client I.D.	MW45-93	MW53-98	MW55-98-I	MW55-98-II	MW56-02-I
		Sample I.D.	24-023502-6	24-023502-7	24-023502-8	24-023502-9	24-023502-10
		Date Collected	2024-07-30	2024-07-29	2024-07-30	2024-07-30	2024-07-29
Parameter	**Units**	**R.L.**	-	-	-	-	-
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Identification Comment	-	-	-	-	-	-	-

		Client I.D.	MW58-I	MW61-10-1	MW61-10-2	MW61-17-1	MW62-17-2
		Sample I.D.	24-023502-11	24-023502-12	24-023502-13	24-023502-14	24-023502-15
		Date Collected	2024-07-29	2024-07-29	2024-07-29	2024-07-29	2024-07-29
Parameter	**Units**	**R.L.**	-	-	-	-	-
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Identification Comment	-	-	-	-	-	-	-

		Client I.D.	MW62-17-3
		Sample I.D.	24-023502-16
		Date Collected	2024-07-29
Parameter	**Units**	**R.L.**	-
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05	<0.05
Identification Comment	-	-	-



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Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-023445 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Jul-31
DATE REPORTED: 2024-Aug-06
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS SW Stormwater
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Cond/pH/Alk Auto (Liquid)	3	OTTAWA	SBOUDREAU	2024-Aug-02	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
Ammonia (Liquid)	3	KINGSTON	JYEARWOOD	2024-Aug-02	NH3-001	SM 4500NH3

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

			Client I.D.	SW14	SW18	Pond Sample
			Sample I.D.	24-023445-1	24-023445-2	24-023445-3
			Date Collected	2024-07-29	2024-07-29	2024-07-29
Parameter	**Units**	**R.L.**		-	-	-
pH @25°C	pH units	-		7.63	7.40	7.88
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.10	0.13	0.10
pH (Client Data)	pH units	-		8.06	7.7	8.49
Temperature (Client Data)	°C	-		22.6	20.9	25.2

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Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-023443 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Jul-31
DATE REPORTED: 2024-Aug-09
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay OPS LPC
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	PCURIEL	2024-Aug-07	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	JWOLFE2	2024-Aug-02	BOD-001	SM 5210B
COD (Liquid)	1	KINGSTON	EHINCH	2024-Aug-06	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2024-Aug-02	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
DOC/DIC (Liquid)	1	OTTAWA	VKASYAN	2024-Aug-08	C-OC-01	EPA 415.2
Ion Balance (Calc.)	1	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	1	OTTAWA	STAILLON	2024-Aug-06	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	1	OTTAWA	AOZKAYMAK	2024-Aug-06	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	APRUDYVUS	2024-Aug-06	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2024-Aug-06	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	1	KINGSTON	JYEARWOOD	2024-Aug-07	NH3-001	SM 4500NH3
Phenols (Liquid)	1	KINGSTON	EHINCH	2024-Aug-07	PHEN-01	MECP E3179
TP & TKN (Liquid)	1	KINGSTON	KDIBBITS	2024-Aug-06	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2024-Aug-08	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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Data Specialist

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			Client I.D.	LPC #1
			Sample I.D.	24-023443-1
			Date Collected	2024-07-30
Parameter	Units	R.L.		-
Alkalinity(CaCO3) to pH4.5	mg/L	5		672
TDS (Calc. from Cond.)	mg/L	3		990
Conductivity @25°C	uS/cm	1		1800
pH @25°C	pH units	-		6.84
Fluoride	mg/L	0.1		<0.7
Chloride	mg/L	0.5		151
Nitrate (N)	mg/L	0.05		<0.40
Nitrite (N)	mg/L	0.05		<0.40
Sulphate	mg/L	1		22
BOD5	mg/L	3		8
Phosphorus (Total)	mg/L	0.01		0.08
Total Kjeldahl Nitrogen	mg/L	0.1		26.5
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		23.0
Dissolved Organic Carbon	mg/L	0.2		21.9
Phenolics	mg/L	0.001		<0.001
COD	mg/L	5		59
Hardness (as CaCO3)	mg/L	0.02		585
Aluminum (Total)	mg/L	0.01		0.30
Barium (Total)	mg/L	0.001		0.300
Beryllium (Total)	mg/L	0.001		<0.001
Boron (Total)	mg/L	0.005		0.415

Michelle Dubien
Data Specialist

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			Client I.D.	LPC #1
			Sample I.D.	24-023443-1
			Date Collected	2024-07-30
Parameter	Units	R.L.		-
Cadmium (Total)	mg/L	0.005		<0.005
Calcium (Total)	mg/L	0.02		176
Chromium (Total)	mg/L	0.002		<0.002
Cobalt (Total)	mg/L	0.005		<0.005
Copper (Total)	mg/L	0.002		<0.002
Iron (Total)	mg/L	0.005		14.5
Lead (Total)	mg/L	0.02		<0.02
Magnesium (Total)	mg/L	0.02		35.6
Manganese (Total)	mg/L	0.001		0.461
Molybdenum (Total)	mg/L	0.01		<0.01
Nickel (Total)	mg/L	0.01		<0.01
Phosphorus (Total)	mg/L	0.1		<0.1
Potassium (Total)	mg/L	0.1		20.0
Silver (Total)	mg/L	0.005		<0.005
Sodium (Total)	mg/L	0.2		118
Strontium (Total)	mg/L	0.001		0.666
Tin (Total)	mg/L	0.05		<0.05
Titanium (Total)	mg/L	0.005		<0.005
Vanadium (Total)	mg/L	0.005		<0.005
Zinc (Total)	mg/L	0.005		<0.005
Antimony (Total)	mg/L	0.0005		<0.0005

Michelle Dubien
Data Specialist

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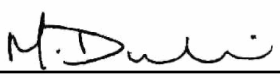
		Client I.D.	LPC #1
		Sample I.D.	24-023443-1
		Date Collected	2024-07-30
Parameter	**Units**	**R.L.**	-
Arsenic (Total)	mg/L	0.0005	0.0011
Selenium (Total)	mg/L	0.005	<0.005
Thallium (Total)	mg/L	0.0003	<0.0003
Uranium (Total)	mg/L	0.0003	<0.0003
Chromium (VI)	mg/L	0.01	<0.01
Mercury	mg/L	0.00002	<0.00002
Anion Sum	meq/L	-	18.2
Cation Sum	meq/L	-	19.8
% Difference	%	-	4.24
Ion Ratio	-	-	0.919
Sodium Adsorption Ratio	-	-	2.13
TDS (Ion Sum Calc)	mg/L	1	971
TDS(calc.)/EC(actual)	-	-	0.539
Conductivity Calc	µmho/cm	-	1660
Conductivity Calc / Conductivity	-	-	0.919
Langelier Index(25°C)	-	-	0.409
Saturation pH (25°C)	-	-	6.43
pH (Client Data)	pH units	-	6.79
Temperature (Client Data)	°C	-	13.3



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Data Specialist

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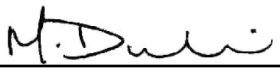
	Client I.D.		LPC #1
	Sample I.D.		24-023443-1
	Date Collected		2024-07-30
Parameter	**Units**	**R.L.**	-
Benzene	µg/L	0.5	3.3
Ethylbenzene	µg/L	0.5	0.8
Toluene	µg/L	0.5	<0.5
Xylene, m,p-	µg/L	1	2
Xylene, m,p,o-	µg/L	1.1	1.7
Xylene, o-	µg/L	0.5	<0.5

Elevated RLs due to sample matrix interferences



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Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-025231 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
112 Commerce Park Dr Unit L
Barrie, ON L4N 8W8

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Aug-16
DATE REPORTED: 2024-Aug-27
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay OPS
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	PCURIEL	2024-Aug-20	A-IC-01	SM 4110B
COD (Liquid)	1	KINGSTON	DCASSIDY	2024-Aug-27	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2024-Aug-20	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
DOC/DIC (Liquid)	1	OTTAWA	VKASYAN	2024-Aug-20	C-OC-01	EPA 415.2
Ion Balance (Calc.)	1	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	1	OTTAWA	STAILLON	2024-Aug-22	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	1	OTTAWA	TPRICE	2024-Aug-20	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	APRUDYVUS	2024-Aug-20	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2024-Aug-20	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	1	KINGSTON	JYEARWOOD	2024-Aug-21	NH3-001	SM 4500NH3
Phenols (Liquid)	1	KINGSTON	EHINCH	2024-Aug-20	PHEN-01	MECP E3179
TP & TKN (Liquid)	1	KINGSTON	KDIBBITS	2024-Aug-21	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2024-Aug-20	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

Michelle Dubien
Data Specialist

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			Client I.D.	LPC 1
			Sample I.D.	24-025231-1
			Date Collected	2024-08-15
Parameter	Units	R.L.		-
Alkalinity(CaCO3) to pH4.5	mg/L	5		657
TDS (Calc. from Cond.)	mg/L	3		979
Conductivity @25°C	uS/cm	1		1780
pH @25°C	pH units	-		7.20
Fluoride	mg/L	0.1		<0.1
Chloride	mg/L	0.5		166
Nitrate (N)	mg/L	0.05		<0.05
Nitrite (N)	mg/L	0.05		<0.05
Sulphate	mg/L	1		25
Phosphorus (Total)	mg/L	0.01		2.25
Total Kjeldahl Nitrogen	mg/L	0.1		27.2
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		19.8
Dissolved Organic Carbon	mg/L	0.2		44.0
Phenolics	mg/L	0.001		<0.001
COD	mg/L	5		290
Hardness (as CaCO3)	mg/L	0.02		745
Aluminum (Total)	mg/L	0.01		2.51
Barium (Total)	mg/L	0.001		2.70
Beryllium (Total)	mg/L	0.001		<0.001
Boron (Total)	mg/L	0.005		0.742
Cadmium (Total)	mg/L	0.005		0.014

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Data Specialist

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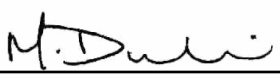
		Client I.D.	LPC 1
		Sample I.D.	24-025231-1
		Date Collected	2024-08-15
Parameter	**Units**	**R.L.**	-
Calcium (Total)	mg/L	0.02	238
Chromium (Total)	mg/L	0.002	0.246
Cobalt (Total)	mg/L	0.005	0.010
Copper (Total)	mg/L	0.002	0.014
Iron (Total)	mg/L	0.005	728
Lead (Total)	mg/L	0.02	0.03
Magnesium (Total)	mg/L	0.02	36.6
Manganese (Total)	mg/L	0.001	0.783
Molybdenum (Total)	mg/L	0.01	<0.01
Nickel (Total)	mg/L	0.01	0.05
Phosphorus (Total)	mg/L	0.1	0.3
Potassium (Total)	mg/L	0.1	22.1
Silver (Total)	mg/L	0.005	<0.005
Sodium (Total)	mg/L	0.2	123
Strontium (Total)	mg/L	0.001	0.978
Tin (Total)	mg/L	0.05	<0.05
Titanium (Total)	mg/L	0.005	0.144
Vanadium (Total)	mg/L	0.005	0.019
Zinc (Total)	mg/L	0.005	0.170
Antimony (Total)	mg/L	0.0005	0.0010
Arsenic (Total)	mg/L	0.0005	0.0326



Michelle Dubien
Data Specialist

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			Client I.D.	LPC 1
			Sample I.D.	24-025231-1
			Date Collected	2024-08-15
Parameter	Units	R.L.		-
Selenium (Total)	mg/L	0.005		<0.005
Thallium (Total)	mg/L	0.0003		<0.0003
Uranium (Total)	mg/L	0.0003		0.0005
Chromium (VI)	mg/L	0.01		<0.01
Mercury	mg/L	0.00002		0.00003
Anion Sum	meq/L	-		18.3
Cation Sum	meq/L	-		22.2
% Difference	%	-		9.68
Ion Ratio	-	-		0.823
Sodium Adsorption Ratio	-	-		1.96
TDS (Ion Sum Calc)	mg/L	1		1030
TDS(calc.)/EC(actual)	-	-		0.578
Conductivity Calc	µmho/cm	-		1810
Conductivity Calc / Conductivity	-	-		1.01
Langelier Index(25°C)	-	-		0.881
Saturation pH (25°C)	-	-		6.32
pH (Client Data)	pH units	-		7.37
Temperature (Client Data)	°C	-		11.7

Michelle Dubien
Data Specialist

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		Client I.D.	LPC 1
		Sample I.D.	24-025231-1
		Date Collected	2024-08-15
Parameter	**Units**	**R.L.**	-
Benzene	µg/L	0.5	2.6
Ethylbenzene	µg/L	0.5	0.7
Toluene	µg/L	0.5	<0.5
Xylene, m,p-	µg/L	1	1
Xylene, m,p,o-	µg/L	1.1	1.4
Xylene, o-	µg/L	0.5	<0.5

Michelle Dubien
Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-025224 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
112 Commerce Park Dr Unit L
Barrie, ON L4N 8W8

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Aug-16
DATE REPORTED: 2024-Aug-28
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay St North
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	PCURIEL	2024-Aug-20	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	DCASSIDY	2024-Aug-21	BOD-001	SM 5210B
COD (Liquid)	1	KINGSTON	DCASSIDY	2024-Aug-27	COD-001	SM 5220D
Colour (Liquid)	1	OTTAWA	STAILLON	2024-Aug-20	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2024-Aug-20	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	1	KINGSTON	EHINCH	2024-Aug-21	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	1	OTTAWA	VKASYAN	2024-Aug-20	C-OC-01	EPA 415.2
Ion Balance (Calc.)	1	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	1	OTTAWA	STAILLON	2024-Aug-20	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	1	OTTAWA	TPRICE	2024-Aug-20	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	NHOGAN	2024-Aug-23	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2024-Aug-20	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	1	KINGSTON	JYEARWOOD	2024-Aug-21	NH3-001	SM 4500NH3
PCB's (Liquid)	1	KINGSTON	CSUMMERHAYS	2024-Aug-20	PCB-001	EPA 8081
Phenols (Liquid)	1	KINGSTON	EHINCH	2024-Aug-20	PHEN-01	MECP E3179
TP & TKN (Liquid)	1	KINGSTON	KDIBBITS	2024-Aug-21	TPTKN-001	MECP E3516.2
TSS (Liquid)	1	KINGSTON	MCLOSS	2024-Aug-27	TSS-001	SM 2540D
Turbidity (Liquid)	1	OTTAWA	PLUSSIER	2024-Aug-21	A-TURB-01	SM 2130B
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2024-Aug-20	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

Michelle Dubien
Data Specialist

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			Client I.D.	LPC
			Sample I.D.	24-025224-1
			Date Collected	2024-08-15
Parameter	Units	R.L.		-
Alkalinity(CaCO3) to pH4.5	mg/L	5		1140
TDS (Calc. from Cond.)	mg/L	3		1410
Conductivity @25°C	uS/cm	1		2530
pH @25°C	pH units	-		7.31
Colour	TCU	2		23
Turbidity	NTU	0.1		10600
Fluoride	mg/L	0.1		<0.1
Chloride	mg/L	0.5		155
Nitrate (N)	mg/L	0.05		0.22
Nitrite (N)	mg/L	0.05		<0.05
Sulphate	mg/L	1		7
BOD5	mg/L	3		12
Total Suspended Solids	mg/L	3		18200
Phosphorus (Total)	mg/L	0.01		166
Total Kjeldahl Nitrogen	mg/L	0.1		158
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		63.2
Ammonia (N)-unionized	mg/L	0.01		0.38
Dissolved Organic Carbon	mg/L	0.2		42.6
Cyanide (WAD)	mg/L	0.005		0.010 (3.)
Phenolics	mg/L	0.001		<0.005 (3.)
COD	mg/L	5		4140

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			Client I.D.	LPC
			Sample I.D.	24-025224-1
			Date Collected	2024-08-15
Parameter	Units	R.L.		-
Hardness (as CaCO3)	mg/L	0.02		1280
Aluminum (Total)	mg/L	0.01		2.43
Barium (Total)	mg/L	0.001		13.9
Beryllium (Total)	mg/L	0.001		<0.001
Boron (Total)	mg/L	0.005		2.05
Cadmium (Total)	mg/L	0.005		0.043
Calcium (Total)	mg/L	0.02		375
Chromium (Total)	mg/L	0.002		0.034
Cobalt (Total)	mg/L	0.005		0.096
Copper (Total)	mg/L	0.002		0.166
Iron (Total)	mg/L	0.005		1790
Lead (Total)	mg/L	0.02		0.34
Magnesium (Total)	mg/L	0.02		82.5
Manganese (Total)	mg/L	0.001		1.25
Molybdenum (Total)	mg/L	0.01		<0.01
Nickel (Total)	mg/L	0.01		0.03
Phosphorus (Total)	mg/L	0.1		16.4
Potassium (Total)	mg/L	0.1		41.1
Silver (Total)	mg/L	0.005		<0.005
Sodium (Total)	mg/L	0.2		141
Strontium (Total)	mg/L	0.001		2.08

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Data Specialist

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			Client I.D.	LPC
			Sample I.D.	24-025224-1
			Date Collected	2024-08-15
Parameter	Units	R.L.		-
Tin (Total)	mg/L	0.05		<0.05
Titanium (Total)	mg/L	0.005		0.158
Vanadium (Total)	mg/L	0.005		0.062
Zinc (Total)	mg/L	0.005		0.629
Antimony (Total)	mg/L	0.0005		0.0022
Arsenic (Total)	mg/L	0.0005		0.324
Selenium (Total)	mg/L	0.005		0.007
Thallium (Total)	mg/L	0.0003		<0.0003
Uranium (Total)	mg/L	0.0003		0.0011
Chromium (VI)	mg/L	0.01		<0.01
Mercury	mg/L	0.00002		<0.00002
Anion Sum	meq/L	-		27.4
Cation Sum	meq/L	-		32.8
% Difference	%	-		9.06
Ion Ratio	-	-		0.834
Sodium Adsorption Ratio	-	-		1.72
TDS (Ion Sum Calc)	mg/L	1		1490
TDS(calc.)/EC(actual)	-	-		0.589
Conductivity Calc	µmho/cm	-		2410
Conductivity Calc / Conductivity	-	-		0.952
Langelier Index(25°C)	-	-		1.43

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		Client I.D.	LPC
		Sample I.D.	24-025224-1
		Date Collected	2024-08-15
Parameter	**Units**	**R.L.**	-
Saturation pH (25°C)	-	-	5.88
pH (Client Data)	pH units	-	7.15
Temperature (Client Data)	°C	-	21.0

Michelle Dubien
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			Client I.D.	LPC
			Sample I.D.	24-025224-1
			Date Collected	2024-08-15
Parameter	Units	R.L.		-
Acetone	µg/L	30		<30
Benzene	µg/L	0.5		4.8
Bromodichloromethane	µg/L	2		<2
Bromoform	µg/L	5		<5
Bromomethane	µg/L	0.5		<0.5
Carbon Tetrachloride	µg/L	0.2		<0.2
Chlorobenzene	µg/L	0.5		26.0
Chloroform	µg/L	1		<1
Chloromethane (Methyl Chloride)	µg/L	2		<2
Dibromochloromethane	µg/L	2		<2
Ethylene Dibromide	µg/L	0.2		<0.2
Dichlorobenzene,1,2-	µg/L	0.5		0.6
Dichlorobenzene,1,3-	µg/L	0.5		<0.5
Dichlorobenzene,1,4-	µg/L	0.5		5.2
Dichloroethane,1,1-	µg/L	0.5		<0.5
Dichloroethane,1,2-	µg/L	0.5		<0.5
Dichloroethylene,1,1-	µg/L	0.5		<0.5
Dichloroethylene,1,2-cis-	µg/L	0.5		<0.5
Dichloroethylene,1,2-trans-	µg/L	0.5		<0.5
Dichloropropane,1,2-	µg/L	0.5		<0.5
Dichloropropene,1,3-cis-	µg/L	0.5		<0.5

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			Client I.D.	LPC
			Sample I.D.	24-025224-1
			Date Collected	2024-08-15
Parameter	Units	R.L.	-	
Dichloropropene,1,3-trans-	µg/L	0.5	<0.5	
Ethylbenzene	µg/L	0.5	<0.5	
Dichloromethane (Methylene Chloride)	µg/L	5	<5	
Methyl Ethyl Ketone	µg/L	2	<2	
Methyl Isobutyl Ketone	µg/L	20	<20	
Methyl tert-Butyl Ether (MTBE)	µg/L	2	<2	
Styrene	µg/L	0.5	<0.5	
Tetrachloroethane,1,1,1,2-	µg/L	0.5	<0.5	
Tetrachloroethane,1,1,2,2-	µg/L	0.5	<0.5	
Tetrachloroethylene	µg/L	0.5	<0.5	
Toluene	µg/L	0.5	<0.5	
Trichlorobenzene,1,2,4-	µg/L	0.5	<0.5	
Trichloroethane,1,1,1-	µg/L	0.5	<0.5	
Trichloroethane,1,1,2-	µg/L	0.5	<0.5	
Trichloroethylene	µg/L	0.5	<0.5	
Trichlorofluoromethane (Freon 11)	µg/L	5	<5	
Vinyl Chloride	µg/L	0.2	<0.2	
Xylene, m,p-	µg/L	1	16	
Xylene, o-	µg/L	0.5	<0.5	

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		Client I.D.	LPC
		Sample I.D.	24-025224-1
		Date Collected	2024-08-15
Parameter	Units	R.L.	-
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05	<0.05
Identification Comment	-	-	-

Comments:

3. Elevated RL due to sample matrix interferences/dilution

Michelle Dubien
Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-025212 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
112 Commerce Park Dr Unit L
Barrie, ON L4N 8W8

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Aug-16
DATE REPORTED: 2024-Aug-28
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	2	OTTAWA	PCURIEL	2024-Aug-19	A-IC-01	SM 4110B
BOD5 (Liquid)	2	KINGSTON	DCASSIDY	2024-Aug-21	BOD-001	SM 5210B
COD (Liquid)	2	KINGSTON	DCASSIDY	2024-Aug-27	COD-001	SM 5220D
Colour (Liquid)	2	OTTAWA	STAILLON	2024-Aug-20	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	2	OTTAWA	SBOUDREAU	2024-Aug-21	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	2	KINGSTON	EHINCH	2024-Aug-21	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	2	OTTAWA	VKASYAN	2024-Aug-20	C-OC-01	EPA 415.2
Ion Balance (Calc.)	2	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	2	OTTAWA	STAILLON	2024-Aug-20	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	2	OTTAWA	AOZKAYMAK	2024-Aug-20	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	2	OTTAWA	APRUDYVUS	2024-Aug-20	D-ICP-01	SM 3120B
ICP/OES (Liquid)	2	OTTAWA	APRUDYVUS	2024-Aug-20	D-ICP-01	SM 3120B
Mercury (Liquid)	2	OTTAWA	TBENNETT	2024-Aug-20	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	2	KINGSTON	JYEARWOOD	2024-Aug-21	NH3-001	SM 4500NH3
Phenols (Liquid)	2	KINGSTON	EHINCH	2024-Aug-20	PHEN-01	MECP E3179
TP & TKN (Liquid)	2	KINGSTON	KDIBBITS	2024-Aug-21	TPTKN-001	MECP E3516.2
TSS (Liquid)	2	KINGSTON	MCLOSS	2024-Aug-27	TSS-001	SM 2540D
Turbidity (Liquid)	2	OTTAWA	PLUSSIER	2024-Aug-20	A-TURB-01	SM 2130B

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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			Client I.D.	DUP	DUP-1
			Sample I.D.	24-025212-1	24-025212-2
			Date Collected	2024-08-15	2024-08-15
Parameter	**Units**	**R.L.**		-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		200	213
Conductivity @25°C	uS/cm	1		485	467
pH @25°C	pH units	-		7.62	7.73
Colour	TCU	2		50	56
Turbidity	NTU	0.1		2.1	1.0
Fluoride	mg/L	0.1		<0.1	<0.1
Chloride	mg/L	0.5		27.1	19.6
Nitrate (N)	mg/L	0.05		0.24	0.11
Nitrite (N)	mg/L	0.05		<0.05	<0.05
Sulphate	mg/L	1		11	10
BOD5	mg/L	3		<3	<3
Total Suspended Solids	mg/L	3		3	3
Phosphorus (Total)	mg/L	0.01		0.02	0.02
Total Kjeldahl Nitrogen	mg/L	0.1		2.1	0.8
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		1.42	0.08
Ammonia (N)-unionized	mg/L	0.01		0.07	0.02
Dissolved Organic Carbon	mg/L	0.2		14.4	11.8
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001
COD	mg/L	5		33	37
Aluminum	mg/L	0.01		0.02	0.02

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			Client I.D.	DUP	DUP-1
			Sample I.D.	24-025212-1	24-025212-2
			Date Collected	2024-08-15	2024-08-15
Parameter	Units	R.L.		-	-
Hardness (as CaCO3)	mg/L	0.02		223	231
Aluminum (Total)	mg/L	0.01		0.04	0.03
Barium (Total)	mg/L	0.001		0.046	0.045
Boron (Total)	mg/L	0.005		0.018	0.016
Calcium (Total)	mg/L	0.02		75.4	79.3
Iron (Total)	mg/L	0.005		0.075	0.058
Magnesium (Total)	mg/L	0.02		8.27	8.06
Manganese (Total)	mg/L	0.001		0.018	0.014
Phosphorus (Total)	mg/L	0.1		<0.1	<0.1
Potassium (Total)	mg/L	0.1		2.5	2.4
Sodium (Total)	mg/L	0.2		15.6	11.8
Strontium (Total)	mg/L	0.001		0.223	0.229
Tin (Total)	mg/L	0.05		<0.05	<0.05
Titanium (Total)	mg/L	0.005		<0.005	<0.005
Zinc (Total)	mg/L	0.005		0.012	<0.005
Antimony (Total)	mg/L	0.0001		0.0002	0.0004
Arsenic (Total)	mg/L	0.0001		0.0003	0.0003
Beryllium (Total)	mg/L	0.0001		<0.0001	<0.0001
Cadmium (Total)	mg/L	0.000015		<0.000015	<0.000015
Chromium (Total)	mg/L	0.001		<0.001	<0.001
Cobalt (Total)	mg/L	0.0001		0.0002	0.0001

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	Client I.D.		DUP	DUP-1
	Sample I.D.		24-025212-1	24-025212-2
	Date Collected		2024-08-15	2024-08-15
Parameter	Units	R.L.	-	-
Copper (Total)	mg/L	0.0001	0.0005	0.0004
Lead (Total)	mg/L	0.00002	0.00016	0.00006
Molybdenum (Total)	mg/L	0.0001	0.0002	0.0002
Nickel (Total)	mg/L	0.0002	0.0007	0.0007
Selenium (Total)	mg/L	0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001	<0.0001	<0.0001
Thallium (Total)	mg/L	0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005	0.00039	0.00039
Vanadium (Total)	mg/L	0.0001	0.0003	0.0003
Chromium (VI)	mg/L	0.001	<0.001	<0.001
Mercury	mg/L	0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-	5.01	5.04
Cation Sum	meq/L	-	5.30	5.21
% Difference	%	-	2.79	1.70
Ion Ratio	-	-	0.946	0.967
Sodium Adsorption Ratio	-	-	0.455	0.336
TDS (Ion Sum Calc)	mg/L	1	263	260
TDS(calc.)/EC(actual)	-	-	0.542	0.557
Conductivity Calc	µmho/cm	-	499	488
Conductivity Calc / Conductivity	-	-	1.03	1.04
Langelier Index(25°C)	-	-	0.367	0.526

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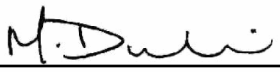
		Client I.D.	DUP	DUP-1
		Sample I.D.	24-025212-1	24-025212-2
		Date Collected	2024-08-15	2024-08-15
Parameter	**Units**	**R.L.**	-	-
Saturation pH (25°C)	-	-	7.25	7.20
pH (Client Data)	pH units	-	8.07	8.68
Temperature (Client Data)	°C	-	21.7	22.1



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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-025236 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
112 Commerce Park Dr Unit L
Barrie, ON L4N 8W8

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Aug-16
DATE REPORTED: 2024-Aug-29
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS SW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	7	OTTAWA	PCURIEL	2024-Aug-20	A-IC-01	SM 4110B
BOD5 (Liquid)	7	KINGSTON	DCASSIDY	2024-Aug-21	BOD-001	SM 5210B
COD (Liquid)	7	KINGSTON	DCASSIDY	2024-Aug-27	COD-001	SM 5220D
Colour (Liquid)	7	OTTAWA	STAILLON	2024-Aug-20	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	7	OTTAWA	SBOUDREAU	2024-Aug-20	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	7	KINGSTON	EHINCH	2024-Aug-21	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	7	OTTAWA	VKASYAN	2024-Aug-20	C-OC-01	EPA 415.2
Ion Balance (Calc.)	7	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	7	OTTAWA	STAILLON	2024-Aug-21	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	7	OTTAWA	AOZKAYMAK	2024-Aug-20	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	7	OTTAWA	APRUDYVUS	2024-Aug-20	D-ICP-01	SM 3120B
ICP/OES (Liquid)	7	OTTAWA	APRUDYVUS	2024-Aug-20	D-ICP-01	SM 3120B
Mercury (Liquid)	7	OTTAWA	TBENNETT	2024-Aug-20	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	7	KINGSTON	JYEARWOOD	2024-Aug-21	NH3-001	SM 4500NH3
PCB's (Liquid)	1	KINGSTON	CSUMMERHAYS	2024-Aug-20	PCB-001	EPA 8081
Phenols (Liquid)	7	KINGSTON	EHINCH	2024-Aug-20	PHEN-01	MECP E3179
Tannins (Liquid)	3	KINGSTON	YLIEN	2024-Aug-20	TAN-001	SM 5550
TP & TKN (Liquid)	7	KINGSTON	KDIBBITS	2024-Aug-21	TPTKN-001	MECP E3516.2
TSS (Liquid)	7	KINGSTON	DCASSIDY	2024-Aug-28	TSS-001	SM 2540D
Turbidity (Liquid)	7	OTTAWA	PLUSSIER	2024-Aug-20	A-TURB-01	SM 2130B
VOC-Volatiles Full (Water)	3	RICHMOND_HILL	FLENA	2024-Aug-21	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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	Client I.D.	SW-2	SW-3	SW-14	SW-15	SW-18
	Sample I.D.	24-025236-1	24-025236-2	24-025236-3	24-025236-4	24-025236-5
	Date Collected	2024-08-15	2024-08-15	2024-08-15	2024-08-15	2024-08-15
Parameter	**Units** / **R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L / 5	322	332	217	100	201
Conductivity @25°C	uS/cm / 1	1030	944	637	448	685
pH @25°C	pH units / -	8.09	8.23	8.03	7.85	8.09
Colour	TCU / 2	9	12	30	21	38
Turbidity	NTU / 0.1	11.0	4.6	8.9	17.1	2.8
Fluoride	mg/L / 0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L / 0.5	129	113	72.7	62.7	93.4
Nitrate (N)	mg/L / 0.05	<0.05	<0.05	<0.05	0.10	0.07
Nitrite (N)	mg/L / 0.05	0.07	0.06	<0.05	<0.05	0.05
Sulphate	mg/L / 1	28	5	5	26	7
BOD5	mg/L / 3	3	<3	<3	<3	<3
Total Suspended Solids	mg/L / 3	35	14	9	11	9
Phosphorus (Total)	mg/L / 0.01	0.06	0.02	0.06	0.05	0.20
Total Kjeldahl Nitrogen	mg/L / 0.1	1.2	0.6	1.0	1.0	1.7
Ammonia (N)-Total (NH3+NH4)	mg/L / 0.05	0.86	0.26	0.08	0.31	0.17
Ammonia (N)-unionized	mg/L / 0.01	<0.01	0.01	<0.01	0.03	<0.01
Dissolved Organic Carbon	mg/L / 0.2	2.9	4.1	12.2	7.4	15.2
Tannin & Lignin	mg/L / 0.5			0.7		1.0
Cyanide (WAD)	mg/L / 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L / 0.001	0.002	0.002	0.002	0.002	0.001
COD	mg/L / 5	11	100	41	23	46

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	Client I.D.	SW-2	SW-3	SW-14	SW-15	SW-18
	Sample I.D.	24-025236-1	24-025236-2	24-025236-3	24-025236-4	24-025236-5
	Date Collected	2024-08-15	2024-08-15	2024-08-15	2024-08-15	2024-08-15
Parameter	**Units** / **R.L.**	-	-	-	-	-
Aluminum	mg/L / 0.01	0.03	0.04	0.03	0.03	0.02
Hardness (as CaCO3)	mg/L / 0.02	399	384	241	127	229
Aluminum (Total)	mg/L / 0.01	0.12	0.08	0.11	0.27	0.07
Barium (Total)	mg/L / 0.001	0.121	0.063	0.039	0.036	0.048
Boron (Total)	mg/L / 0.005	0.034	0.027	0.060	0.088	0.099
Calcium (Total)	mg/L / 0.02	138	134	82.9	41.2	77.5
Iron (Total)	mg/L / 0.005	0.818	0.578	0.331	0.361	0.866
Magnesium (Total)	mg/L / 0.02	13.2	12.2	8.11	5.84	8.46
Manganese (Total)	mg/L / 0.001	0.129	0.157	0.198	0.021	0.476
Phosphorus (Total)	mg/L / 0.1	<0.1	<0.1	<0.1	<0.1	0.1
Potassium (Total)	mg/L / 0.1	4.0	2.6	4.4	6.1	6.5
Sodium (Total)	mg/L / 0.2	74.5	62.8	46.1	44.2	57.6
Strontium (Total)	mg/L / 0.001	0.442	0.388	0.272	0.254	0.285
Tin (Total)	mg/L / 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium (Total)	mg/L / 0.005	<0.005	<0.005	0.005	0.011	<0.005
Zinc (Total)	mg/L / 0.005	0.017	<0.005	0.005	0.007	<0.005
Antimony (Total)	mg/L / 0.0001	0.0002	0.0004	0.0003	0.0006	0.0004
Arsenic (Total)	mg/L / 0.0001	0.0007	0.0004	0.0005	0.0005	0.0005
Beryllium (Total)	mg/L / 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium (Total)	mg/L / 0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium (Total)	mg/L / 0.001	<0.001	<0.001	<0.001	<0.001	<0.001

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Parameter	Units	R.L.	Client I.D.	SW-2	SW-3	SW-14	SW-15	SW-18
			Sample I.D.	24-025236-1	24-025236-2	24-025236-3	24-025236-4	24-025236-5
			Date Collected	2024-08-15	2024-08-15	2024-08-15	2024-08-15	2024-08-15
				-	-	-	-	-
Cobalt (Total)	mg/L	0.0001		0.0009	0.0003	0.0003	0.0003	0.0002
Copper (Total)	mg/L	0.0001		0.0008	0.0009	0.0007	0.0030	0.0005
Lead (Total)	mg/L	0.00002		0.00023	0.00023	0.00009	0.00037	0.00008
Molybdenum (Total)	mg/L	0.0001		0.0002	0.0001	0.0001	0.0006	<0.0001
Nickel (Total)	mg/L	0.0002		0.0009	0.0005	0.0007	0.0014	0.0006
Selenium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001		0.0003	0.0003	0.0004	0.0003	0.0003
Thallium (Total)	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005		0.00063	0.00034	0.00014	0.00068	<0.00005
Vanadium (Total)	mg/L	0.0001		0.0003	0.0002	0.0005	0.0005	0.0002
Chromium (VI)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		10.7	9.96	6.51	4.32	6.81
Cation Sum	meq/L	-		11.4	10.5	6.96	4.66	7.32
% Difference	%	-		3.48	2.82	3.36	3.79	3.63
Ion Ratio	-	-		0.933	0.945	0.935	0.927	0.930
Sodium Adsorption Ratio	-	-		1.62	1.40	1.29	1.71	1.66
TDS (Ion Sum Calc)	mg/L	1		582	531	351	247	373
TDS(calc.)/EC(actual)	-	-		0.565	0.562	0.550	0.552	0.544
Conductivity Calc	µmho/cm	-		1060	980	663	473	707
Conductivity Calc / Conductivity	-	-		1.03	1.04	1.04	1.06	1.03

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			Client I.D.	SW-2	SW-3	SW-14	SW-15	SW-18
			Sample I.D.	24-025236-1	24-025236-2	24-025236-3	24-025236-4	24-025236-5
			Date Collected	2024-08-15	2024-08-15	2024-08-15	2024-08-15	2024-08-15
Parameter	**Units**	**R.L.**		-	-	-	-	-
Langelier Index(25°C)	-	-		1.26	1.41	0.833	0.0334	0.831
Saturation pH (25°C)	-	-		6.83	6.82	7.20	7.82	7.26
pH (Client Data)	pH units	-		7.07	8.31	7.84	8.39	7.80
Temperature (Client Data)	°C	-		17.4	15.4	22.6	21.7	20.0

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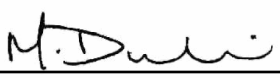
	Client I.D.		WPCP Effluent	CP1
	Sample I.D.		24-025236-6	24-025236-7
	Date Collected		2024-08-15	2024-08-15
Parameter	**Units**	**R.L.**	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	209	163
Conductivity @25°C	uS/cm	1	1280	657
pH @25°C	pH units	-	8.10	8.11
Colour	TCU	2	14	55
Turbidity	NTU	0.1	3.1	5.9
Fluoride	mg/L	0.1	<0.1	<0.1
Chloride	mg/L	0.5	234	93.3
Nitrate (N)	mg/L	0.05	6.29	<0.05
Nitrite (N)	mg/L	0.05	0.10	0.06
Sulphate	mg/L	1	56	12
BOD5	mg/L	3	<3	<3
Total Suspended Solids	mg/L	3	13	5
Phosphorus (Total)	mg/L	0.01	0.07	0.08
Total Kjeldahl Nitrogen	mg/L	0.1	1.2	2.0
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.11	0.20
Ammonia (N)-unionized	mg/L	0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2	3.6	23.4
Tannin & Lignin	mg/L	0.5		0.9
Cyanide (WAD)	mg/L	0.005	<0.005	<0.005
Phenolics	mg/L	0.001	<0.001	<0.001
COD	mg/L	5	30	72



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	Client I.D.		WPCP Effluent	CP1
	Sample I.D.		24-025236-6	24-025236-7
	Date Collected		2024-08-15	2024-08-15
Parameter	**Units**	**R.L.**	-	-
Aluminum	mg/L	0.01	0.13	0.02
Hardness (as CaCO3)	mg/L	0.02	277	141
Aluminum (Total)	mg/L	0.01	1.98	0.14
Barium (Total)	mg/L	0.001	0.054	0.036
Boron (Total)	mg/L	0.005	0.113	0.106
Calcium (Total)	mg/L	0.02	90.0	45.8
Iron (Total)	mg/L	0.005	0.042	0.296
Magnesium (Total)	mg/L	0.02	12.6	6.33
Manganese (Total)	mg/L	0.001	0.005	0.130
Phosphorus (Total)	mg/L	0.1	<0.1	<0.1
Potassium (Total)	mg/L	0.1	14.3	49.8
Sodium (Total)	mg/L	0.2	134	49.8
Strontium (Total)	mg/L	0.001	0.301	0.244
Tin (Total)	mg/L	0.05	<0.05	<0.05
Titanium (Total)	mg/L	0.005	<0.005	0.006
Zinc (Total)	mg/L	0.005	0.010	<0.005
Antimony (Total)	mg/L	0.0001	0.0005	0.0006
Arsenic (Total)	mg/L	0.0001	0.0002	0.0012
Beryllium (Total)	mg/L	0.0001	<0.0001	<0.0001
Cadmium (Total)	mg/L	0.000015	<0.000015	<0.000015
Chromium (Total)	mg/L	0.001	<0.001	<0.001

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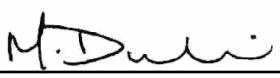
	Client I.D.		WPCP Effluent	CP1
	Sample I.D.		24-025236-6	24-025236-7
	Date Collected		2024-08-15	2024-08-15
Parameter	**Units**	**R.L.**	-	-
Cobalt (Total)	mg/L	0.0001	0.0002	0.0003
Copper (Total)	mg/L	0.0001	0.0067	0.0009
Lead (Total)	mg/L	0.00002	0.00013	0.00025
Molybdenum (Total)	mg/L	0.0001	0.0021	0.0008
Nickel (Total)	mg/L	0.0002	0.0009	0.0015
Selenium (Total)	mg/L	0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001	0.0002	0.0003
Thallium (Total)	mg/L	0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005	0.00023	0.00011
Vanadium (Total)	mg/L	0.0001	0.0004	0.0006
Chromium (VI)	mg/L	0.001	<0.001	<0.001
Mercury	mg/L	0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-	12.4	6.15
Cation Sum	meq/L	-	11.7	6.29
% Difference	%	-	2.72	1.09
Ion Ratio	-	-	1.06	0.978
Sodium Adsorption Ratio	-	-	3.51	1.83
TDS (Ion Sum Calc)	mg/L	1	694	356
TDS(calc.)/EC(actual)	-	-	0.543	0.542
Conductivity Calc	µmho/cm	-	1240	661
Conductivity Calc / Conductivity	-	-	0.972	1.01



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		Client I.D.	WPCP Effluent	CP1
		Sample I.D.	24-025236-6	24-025236-7
		Date Collected	2024-08-15	2024-08-15
Parameter	**Units**	**R.L.**	-	-
Langelier Index(25°C)	-	-	0.893	0.530
Saturation pH (25°C)	-	-	7.21	7.58
pH (Client Data)	pH units	-	7.95	7.77
Temperature (Client Data)	°C	-	21.6	24.5

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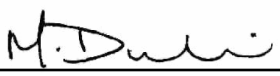
			Client I.D.	SW-3	SW-14	SW-18
			Sample I.D.	24-025236-2	24-025236-3	24-025236-5
			Date Collected	2024-08-15	2024-08-15	2024-08-15
Parameter	**Units**	**R.L.**		-	-	-
Acetone	µg/L	30		<30	<30	<30
Benzene	µg/L	0.5		<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	2		<2	<2	<2
Bromoform	µg/L	5		<5	<5	<5
Bromomethane	µg/L	0.5		<0.5	<0.5	<0.5
Carbon Tetrachloride	µg/L	0.2		<0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5		<0.5	<0.5	<0.5
Chloroform	µg/L	1		<1	<1	<1
Chloromethane (Methyl Chloride)	µg/L	2		<2	<2	<2
Dibromochloromethane	µg/L	2		<2	<2	<2
Ethylene Dibromide	µg/L	0.2		<0.2	<0.2	<0.2
Dichlorobenzene,1,2-	µg/L	0.5		<0.5	<0.5	<0.5
Dichlorobenzene,1,3-	µg/L	0.5		<0.5	<0.5	<0.5
Dichlorobenzene,1,4-	µg/L	0.5		<0.5	<0.5	<0.5
Dichloroethane,1,1-	µg/L	0.5		<0.5	<0.5	<0.5
Dichloroethane,1,2-	µg/L	0.5		<0.5	<0.5	<0.5
Dichloroethylene,1,1-	µg/L	0.5		<0.5	<0.5	<0.5
Dichloroethylene,1,2-cis-	µg/L	0.5		<0.5	<0.5	<0.5
Dichloroethylene,1,2-trans-	µg/L	0.5		<0.5	<0.5	<0.5
Dichloropropane,1,2-	µg/L	0.5		<0.5	<0.5	<0.5
Dichloropropene,1,3-cis-	µg/L	0.5		<0.5	<0.5	<0.5



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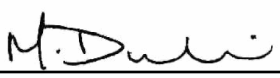
			Client I.D.	SW-3	SW-14	SW-18
			Sample I.D.	24-025236-2	24-025236-3	24-025236-5
			Date Collected	2024-08-15	2024-08-15	2024-08-15
Parameter	Units	R.L.		-	-	-
Dichloropropene,1,3-trans-	µg/L	0.5		<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5
Dichloromethane (Methylene Chloride)	µg/L	5		<5	<5	<5
Methyl Ethyl Ketone	µg/L	2		<2	<2	<2
Methyl Isobutyl Ketone	µg/L	20		<20	<20	<20
Methyl tert-Butyl Ether (MTBE)	µg/L	2		<2	<2	<2
Styrene	µg/L	0.5		<0.5	<0.5	<0.5
Tetrachloroethane,1,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5
Tetrachloroethane,1,1,2,2-	µg/L	0.5		<0.5	<0.5	<0.5
Tetrachloroethylene	µg/L	0.5		<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5
Trichlorobenzene,1,2,4-	µg/L	0.5		<0.5	<0.5	<0.5
Trichloroethane,1,1,1-	µg/L	0.5		<0.5	<0.5	<0.5
Trichloroethane,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5
Trichloroethylene	µg/L	0.5		<0.5	<0.5	<0.5
Trichlorofluoromethane (Freon 11)	µg/L	5		<5	<5	<5
Vinyl Chloride	µg/L	0.2		<0.2	<0.2	<0.2
Xylene, m,p-	µg/L	1		<1	<1	<1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5



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		Client I.D.	SW-3
		Sample I.D.	24-025236-2
		Date Collected	2024-08-15
Parameter	Units	R.L.	-
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05	<0.05
Identification Comment	-	-	-

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-025250 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
112 Commerce Park Dr Unit L
Barrie, ON L4N 8W8

Attention: Kayla Pantaleo

DATE RECEIVED: 2024-Aug-16
DATE REPORTED: 2024-Aug-23
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS SW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Cond/pH/Alk Auto (Liquid)	2	OTTAWA	SBOUDREAU	2024-Aug-20	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
ICP/OES Total (Liquid)	2	OTTAWA	APRUDYVUS	2024-Aug-20	D-ICP-01	SM 3120B
ICP/OES (Liquid)	2	OTTAWA	NHOGAN	2024-Aug-19	D-ICP-01	SM 3120B
Ammonia (Liquid)	2	KINGSTON	JYEARWOOD	2024-Aug-21	NH3-001	SM 4500NH3
TSS (Liquid)	2	KINGSTON	MCLOSS	2024-Aug-21	TSS-001	SM 2540D
Turbidity (Liquid)	2	OTTAWA	PLUSSIER	2024-Aug-20	A-TURB-01	SM 2130B

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

			Client I.D.	Nearshore 1	Nearshore 2
			Sample I.D.	24-025250-1	24-025250-2
			Date Collected	2024-08-15	2024-08-15
Parameter	**Units**	**R.L.**		-	-
pH @25°C	pH units	-		8.06	8.66
Turbidity	NTU	0.1		0.7	2.3
Total Suspended Solids	mg/L	3		3	10
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.33	<0.05
Iron	mg/L	0.005		<0.005	<0.005
Iron (Total)	mg/L	0.005		0.025	0.033
pH (Client Data)	pH units	-		8.68	8.62
Temperature (Client Data)	°C	-		22.0	24.5

Michelle Dubien
Data Specialist

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SAMPLES SUBMITTED TO: Kingston [ ] Ottawa [ ] Richmond Hill [ ] Barrie [X] London [ ] Windsor [ ]

TESTING REQUIREMENTS: [ ] O'Reg 153 [ ] Table (1-9) [ ] Record of Site (Y/N) [ ] RPI [ ] ICC [ ] Agricultural [ ] Medium/Fine [ ] Course [ ] O'Reg 558 Leachate Analysis [ ] MISA Guidelines Site: [ ] Provincial Water Quality Objectives [X] Landfill Monitoring [ ] Other:

REPORT NUMBER (Lab Use): 24-025212

Are any samples to be submitted intended for Human Consumption under any Drinking Water Regulations? [ ] Yes [X] No (If yes, submit all Drinking Water Samples on a Drinking Water Chain of Custody)

Organization:	Address:	Invoicing Address (if different):
City of Kawartha Lakes	322 Kent St. W. Lindsay, Ontario	
Contact: Bonnie Ferguson		
Tel: / Fax:		
Email: bmferguson@kawarthalakes.ca	Quote No:	Project Name/No.: Lindsay OPS SW
Additional Info (email, cell, etc):	P.O. No.:	Additional Info:

ANALYSES REQUESTED (type text in the boxes): 2CAC; Al (diss.); PCB; Suspected Highly Contaminated

TURNAROUND SERVICE REQUESTED (see back page): [ ] Platinum 200% Surcharge; [ ] Gold 100% Surcharge; [ ] Silver 50% Surcharge; [ ] Bronze 25% Surcharge; [X] Standard 5-7 days; [ ] Specific Date:

* Sample Matrix Legend: WW=Waste Water, SW=Surface Water, GW=Groundwater, LS=Liquid Sludge, SS=Solid Sludge, S=Soil, Sed=Sediment, PC=Paint Chips, F=Filter, Oil = Oil

Lab No.	Sample Source and/or Sample Identification	S.P.L.	Sample Matrix *	Date Collected (yy-mm-dd)	Time Collected	Indicate Test For Each Sample By Using A Check Mark In The Box Provided (2CAC, Al (diss.))	X	Field pH	Field Temp.	# Bottles/ Sample	Field Filtered Y/N
1	DUP		SW	24-08-15		X X		~~8.07~~ 8.08	21.7	8	N
2	DUP-1		SW	↓ *		X X		8.~~08~~ 09	22.1	8	N
	1-2: genchem + Nut + CN + phenol →		K								
	1-2: genchem + DOC + Hg + CrVI +		metals → (F+UF)	O							

SAMPLE SUBMISSION INFORMATION

	Sampled by:	Submitted by:
Print:	~~Devin McPhee~~ B. Ploeg	~~Devin McPhee~~ B. Ploeg
Sign:		
Date (yy-mm-dd)/Time:	~~24-04-25~~ 24-08-15	~~24-04-25~~ 24-08-15

SHIPPING INFORMATION: Courier (Client account) [ ]; Courier (Caduceon account) [ ]; Drop Off (AH) [X]; Caduceon (Pick-up) [ ]

Invoice; # of Pieces: 1

REPORTING / INVOICING: Report by Fax [ ]; Report by Email [X]; Invoice by Email [X]; Invoice by Mail [ ]

SAMPLE RECEIVING INFORMATION (LABORATORY USE ONLY)

Received By (print): Amanda — Signature:

Date Received (yy-mm-dd): 24-08-16 — Time Received: 800

Laboratory Prepared Bottles: [X] Yes [ ] No

Sample Temperature °C: 16.9 — Labeled by:

Comments: * As per client IP 24/8/16 — CN & metals (F) → split in Lab, For both IP 24/8/16

Page 1 ~~3~~ of 1 ~~3~~

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-030702 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Oct-02
DATE REPORTED: 2024-Oct-11
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay OPS
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	LMACGREGOR	2024-Oct-07	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	JWOLFE2	2024-Oct-03	BOD-001	SM 5210B
COD (Liquid)	1	KINGSTON	DCASSIDY	2024-Oct-08	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2024-Oct-04	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
DOC/DIC (Liquid)	1	OTTAWA	SLOZO	2024-Oct-03	C-OC-01	EPA 415.2
Ion Balance (Calc.)	1	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	1	OTTAWA	STAILLON	2024-Oct-09	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	1	OTTAWA	TPRICE	2024-Oct-08	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	APRUDYVUS	2024-Oct-04	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2024-Oct-04	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	1	KINGSTON	JYEARWOOD	2024-Oct-07	NH3-001	SM 4500NH3
Phenols (Liquid)	1	KINGSTON	EHINCH	2024-Oct-04	PHEN-01	MECP E3179
TP & TKN (Liquid)	1	KINGSTON	KDIBBITS	2024-Oct-08	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	JEVANS	2024-Oct-11	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
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Michelle Dubien
Data Specialist

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			Client I.D.	LPC
			Sample I.D.	24-030702-1
			Date Collected	2024-09-30
Parameter	Units	R.L.		-
Alkalinity(CaCO3) to pH4.5	mg/L	5		710
TDS (Calc. from Cond.)	mg/L	3		1010
Conductivity @25°C	uS/cm	1		1830
pH @25°C	pH units	-		7.38
Fluoride	mg/L	0.1		<0.1
Chloride	mg/L	0.5		179
Nitrate (N)	mg/L	0.05		<0.05
Nitrite (N)	mg/L	0.05		<0.05
Sulphate	mg/L	1		26
BOD5	mg/L	3		8
Phosphorus (Total)	mg/L	0.01		0.69
Total Kjeldahl Nitrogen	mg/L	0.1		27.4
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		22.9
Dissolved Organic Carbon	mg/L	0.2		41.7
Phenolics	mg/L	0.001		<0.001
COD	mg/L	5		191
Hardness (as CaCO3)	mg/L	0.02		752
Aluminum (Total)	mg/L	0.01		2.42
Barium (Total)	mg/L	0.001		0.925
Beryllium (Total)	mg/L	0.001		<0.001
Boron (Total)	mg/L	0.005		0.549

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			Client I.D.	LPC
			Sample I.D.	24-030702-1
			Date Collected	2024-09-30
Parameter	Units	R.L.		-
Cadmium (Total)	mg/L	0.005		<0.005
Calcium (Total)	mg/L	0.02		240
Chromium (Total)	mg/L	0.002		0.011
Cobalt (Total)	mg/L	0.005		<0.005
Copper (Total)	mg/L	0.002		0.010
Iron (Total)	mg/L	0.005		215
Lead (Total)	mg/L	0.02		0.02
Magnesium (Total)	mg/L	0.02		36.8
Manganese (Total)	mg/L	0.001		0.650
Molybdenum (Total)	mg/L	0.01		<0.01
Nickel (Total)	mg/L	0.01		0.02
Phosphorus (Total)	mg/L	0.1		0.5
Potassium (Total)	mg/L	0.1		21.6
Silver (Total)	mg/L	0.005		<0.005
Sodium (Total)	mg/L	0.2		114
Strontium (Total)	mg/L	0.001		0.877
Tin (Total)	mg/L	0.05		<0.05
Titanium (Total)	mg/L	0.005		0.140
Vanadium (Total)	mg/L	0.005		0.011
Zinc (Total)	mg/L	0.005		0.066
Antimony (Total)	mg/L	0.0005		0.0008

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			Client I.D.	LPC
			Sample I.D.	24-030702-1
			Date Collected	2024-09-30
Parameter	Units	R.L.		-
Arsenic (Total)	mg/L	0.0005		0.0147
Selenium (Total)	mg/L	0.005		<0.005
Thallium (Total)	mg/L	0.0003		<0.0003
Uranium (Total)	mg/L	0.0003		0.0005
Chromium (VI)	mg/L	0.01		<0.01
Mercury	mg/L	0.00002		<0.00002
Anion Sum	meq/L	-		19.8
Cation Sum	meq/L	-		22.2
% Difference	%	-		5.76
Ion Ratio	-	-		0.891
Sodium Adsorption Ratio	-	-		1.81
TDS (Ion Sum Calc)	mg/L	1		1070
TDS(calc.)/EC(actual)	-	-		0.586
Conductivity Calc	µmho/cm	-		1860
Conductivity Calc / Conductivity	-	-		1.02
Langelier Index(25°C)	-	-		1.10
Saturation pH (25°C)	-	-		6.28
pH (Client Data)	pH units	-		8.76
Temperature (Client Data)	°C	-		12.2

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		Client I.D.	LPC
		Sample I.D.	24-030702-1
		Date Collected	2024-09-30
Parameter	**Units**	**R.L.**	-
Benzene	µg/L	0.5	2.4
Ethylbenzene	µg/L	0.5	1.0
Toluene	µg/L	0.5	<0.5
Xylene, m,p-	µg/L	1	2
Xylene, m,p,o-	µg/L	1.1	1.9
Xylene, o-	µg/L	0.5	<0.5

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: Lindsay OPS

REPORT No: 24-031920 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
285 Dalton Ave
Kingston, ON K7K 6Z1

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Oct-11
DATE REPORTED: 2024-Nov-06
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay OPS
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	2	OTTAWA	PCURIEL	2024-Oct-19	A-IC-01	SM 4110B
BOD5 (Liquid)	2	KINGSTON	JWOLFE2	2024-Oct-18	BOD-001	SM 5210B
COD (Liquid)	2	KINGSTON	DCASSIDY	2024-Oct-18	COD-001	SM 5220D
Colour (Liquid)	2	OTTAWA	STAILLON	2024-Oct-17	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	2	OTTAWA	SBOUDREAU	2024-Oct-16	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	2	KINGSTON	EHINCH	2024-Oct-15	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	2	OTTAWA	SLOZO	2024-Oct-29	C-OC-01	EPA 415.2
Ion Balance (Calc.)	2	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	2	OTTAWA	STAILLON	2024-Oct-18	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	2	OTTAWA	AOZKAYMAK	2024-Oct-16	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	2	OTTAWA	APRUDYVUS	2024-Oct-16	D-ICP-01	SM 3120B
Mercury (Liquid)	2	OTTAWA	TBENNETT	2024-Oct-16	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	2	KINGSTON	JYEARWOOD	2024-Oct-22	NH3-001	SM 4500NH3
NTA Liquid (Subcontract)	1	SGS_LAKEFIELD	SWOOD	2024-Oct-17		Subcontracted
OC Pesticides (Liquid)	1	KINGSTON	CSUMMERHAYS	2024-Oct-22	PESTCL-001	EPA 8081
PCB's (Liquid)	1	KINGSTON	CSUMMERHAYS	2024-Oct-18	PCB-001	EPA 8081
Phenols (Liquid)	2	KINGSTON	EHINCH	2024-Oct-22	PHEN-01	MECP E3179
Radionuc. Liquid (Subcontract)	1	BUREAU_VERITAS	SWOOD	2024-Nov-04		Subcontracted
TP & TKN (Liquid)	2	KINGSTON	KDIBBITS	2024-Oct-22	TPTKN-001	MECP E3516.2
TSS (Liquid)	2	KINGSTON	MCLOSS	2024-Oct-15	TSS-001	SM 2540D
Turbidity (Liquid)	2	OTTAWA	PLUSSIER	2024-Oct-17	A-TURB-01	SM 2130B
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2024-Oct-26	C-VOC-02	EPA 8260

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	Client I.D.		LPC 1	LPC 2
	Sample I.D.		24-031920-1	24-031920-2
	Date Collected		2024-10-10	2024-10-10
Parameter	**Units**	**R.L.**	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	680	1620
TDS (Calc. from Cond.)	mg/L	3	1040	2770
Conductivity @25°C	uS/cm	1	1900	4910
pH @25°C	pH units	-	7.80	7.97
Colour	TCU	2	13	246
Turbidity	NTU	0.1	920	23.0
Fluoride	mg/L	0.1	<0.1	<1.8
Chloride	mg/L	0.5	175	596
Nitrate (N)	mg/L	0.05	<0.05	<1.00
Nitrite (N)	mg/L	0.05	<0.05	<1.00
Sulphate	mg/L	1	25	42
BOD5	mg/L	3	4	18
Total Suspended Solids	mg/L	3	500	250
Phosphorus (Total)	mg/L	0.01	0.18	0.91
Total Kjeldahl Nitrogen	mg/L	0.1	29.1	269
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	24.2	244
Ammonia (N)-unionized	mg/L	0.01	0.09	0.47
Dissolved Organic Carbon	mg/L	0.2	16.4	26.4
Cyanide (WAD)	mg/L	0.005	<0.005	<0.005
Phenolics	mg/L	0.001	<0.001	0.006
COD	mg/L	5	82	394

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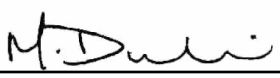
Parameter	Units	R.L.	Client I.D.	LPC 1	LPC 2
			Sample I.D.	24-031920-1	24-031920-2
			Date Collected	2024-10-10	2024-10-10
			-	-	-
Hardness (as CaCO3)	mg/L	0.02		611	807
Aluminum (Total)	mg/L	0.01		0.16	0.12
Barium (Total)	mg/L	0.001		0.364	0.484
Beryllium (Total)	mg/L	0.001		<0.001	<0.001
Boron (Total)	mg/L	0.005		0.461	5.34
Cadmium (Total)	mg/L	0.005		<0.005	<0.005
Calcium (Total)	mg/L	0.02		178	210
Chromium (Total)	mg/L	0.002		<0.002	0.019
Cobalt (Total)	mg/L	0.005		<0.005	0.012
Copper (Total)	mg/L	0.002		<0.002	0.002
Iron (Total)	mg/L	0.005		19.7	4.07
Lead (Total)	mg/L	0.02		<0.02	<0.02
Magnesium (Total)	mg/L	0.02		40.1	68.4
Manganese (Total)	mg/L	0.001		0.388	0.454
Molybdenum (Total)	mg/L	0.01		<0.01	<0.01
Nickel (Total)	mg/L	0.01		<0.01	0.04
Phosphorus (Total)	mg/L	0.1		<0.1	0.8
Potassium (Total)	mg/L	0.1		22.6	168
Silver (Total)	mg/L	0.005		<0.005	<0.005
Sodium (Total)	mg/L	0.2		131	469
Strontium (Total)	mg/L	0.001		0.718	1.85



Michelle Dubien
Data Specialist

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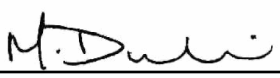
Parameter	Units	R.L.	Client I.D.: LPC 1	Client I.D.: LPC 2
			Sample I.D.: 24-031920-1	Sample I.D.: 24-031920-2
			Date Collected: 2024-10-10	Date Collected: 2024-10-10
			-	-
Tin (Total)	mg/L	0.05	<0.05	<0.05
Titanium (Total)	mg/L	0.005	0.006	0.030
Vanadium (Total)	mg/L	0.005	<0.005	0.012
Zinc (Total)	mg/L	0.005	0.008	0.195
Antimony (Total)	mg/L	0.0005	<0.0005	0.0016
Arsenic (Total)	mg/L	0.0005	0.0018	0.0148
Selenium (Total)	mg/L	0.005	<0.005	<0.005
Thallium (Total)	mg/L	0.0003	<0.0003	<0.0003
Uranium (Total)	mg/L	0.0003	<0.0003	<0.0003
Chromium (VI)	mg/L	0.01	<0.01	<0.01
Mercury	mg/L	0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-	19.0	50.1
Cation Sum	meq/L	-	19.6	41.1
% Difference	%	-	1.38	9.87
Ion Ratio	-	-	0.973	1.22
Sodium Adsorption Ratio	-	-	2.31	7.19
TDS (Ion Sum Calc)	mg/L	1	1000	2530
TDS(calc.)/EC(actual)	-	-	0.527	0.516
Conductivity Calc	µmho/cm	-	1650	3750
Conductivity Calc / Conductivity	-	-	0.867	0.765
Langelier Index(25°C)	-	-	1.38	1.98



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		Client I.D.	LPC 1	LPC 2
		Sample I.D.	24-031920-1	24-031920-2
		Date Collected	2024-10-10	2024-10-10
Parameter	**Units**	**R.L.**	-	-
Saturation pH (25°C)	-	-	6.42	5.99
pH (Client Data)	pH units	-	7.32	6.88
Temperature (Client Data)	°C	-	9.9	14.1

		Client I.D.	LPC 1	
		Sample I.D.	24-031920-1	
		Date Collected	2024-10-10	
Parameter	**Units**	**R.L.**	-	
Benzene	µg/L	0.5	1.4	
Bromodichloromethane	µg/L	2	<2	
Bromoform	µg/L	5	<5	
Chloroform	µg/L	1	<1	
Dibromochloromethane	µg/L	2	<2	
Ethylbenzene	µg/L	0.5	<0.5	
Total Trihalomethanes	µg/L	6	<6	
Toluene	µg/L	0.5	<0.5	
Xylene, m,p-	µg/L	1	1	
Xylene, m,p,o-	µg/L	1.1	1.2	
Xylene, o-	µg/L	0.5	<0.5	

Michelle Dubien
Data Specialist

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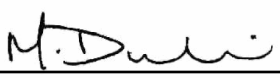
			Client I.D.	LPC 1
			Sample I.D.	24-031920-1
			Date Collected	2024-10-10
Parameter	Units	R.L.		-
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05		<0.05
Identification Comment	-	-		-
BHC (alpha)	µg/L	0.4		<0.4
Aldrin	µg/L	0.01		<0.01
BHC (beta)	µg/L	0.4		<0.4
Chlordane (alpha)	µg/L	0.05		<0.05
Chlordane (gamma)	µg/L	0.05		<0.05
Chlordane (Alpha + Gamma)	µg/L	0.05		<0.05
BHC (delta)	µg/L	0.01		<0.01
p,p'-DDD	µg/L	0.05		<0.05
p,p'-DDE	µg/L	0.01		<0.01
o,p'-DDT	µg/L	0.05		<0.05
p,p'-DDT	µg/L	0.05		<0.05
Dieldrin	µg/L	0.01		<0.01
Endosulfan I	µg/L	0.05		<0.05
Endosulfan II	µg/L	0.05		<0.05
Endosulfan (Total)	µg/L	0.05		<0.05
Endosulfan Sulfate	µg/L	0.05		<0.05
Endrin	µg/L	0.05		<0.05
Heptachlor	µg/L	0.01		<0.01
Heptachlor Epoxide	µg/L	0.01		<0.01



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		Client I.D.	LPC 1
		Sample I.D.	24-031920-1
		Date Collected	2024-10-10
Parameter	Units	R.L.	-
Hexachlorobenzene	µg/L	0.01	<0.01
Lindane (Hexachlorocyclohexane, Gamma)	µg/L	0.01	<0.01
Methoxychlor	µg/L	0.05	<0.05
Mirex	µg/L	1	<1

Subcontracted Analyses

		Client I.D.	LPC 1
		Sample I.D.	24-031920-1
		Date Collected	2024-10-10
Parameter	Units	R.L.	-
Nitrilotriacetic acid (NTA)	mg/L	-	<0.1
Gross Alpha	Bq/L	-	0.50
Gross Beta	Bq/L	-	1.70

Elevated RLs due to sample matrix interferences

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: Lindsay OPS

REPORT No: 24-032634 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
285 Dalton Ave
Kingston, ON K7K 6Z1

Attention: Kayla Pantaleo

DATE RECEIVED: 2024-Oct-18
DATE REPORTED: 2024-Nov-02
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Lindsay OPS GW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	26	OTTAWA	LMACGREGOR	2024-Oct-29	A-IC-01	SM 4110B
BOD5 (Liquid)	26	KINGSTON	JWOLFE2	2024-Oct-24	BOD-001	SM 5210B
COD (Liquid)	26	KINGSTON	DCASSIDY	2024-Oct-24	COD-001	SM 5220D
Colour (Liquid)	26	OTTAWA	STAILLON	2024-Oct-23	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	26	OTTAWA	SBOUDREAU	2024-Oct-23	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	26	KINGSTON	EHINCH	2024-Oct-22	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	26	OTTAWA	MMACMILLAN	2024-Oct-31	C-OC-01	EPA 415.2
Ion Balance (Calc.)	26	OTTAWA	TPRICE		CP-028	MECP E3196
Chromium VI (Liquid)	26	OTTAWA	STAILLON	2024-Oct-29	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	2	OTTAWA	AOZKAYMAK	2024-Oct-25	D-ICPMS-01	EPA 6020
ICP/MS (Liquid)	24	OTTAWA	AOZKAYMAK	2024-Oct-24	D-ICPMS-01	EPA 200.8
ICP/OES Total (Liquid)	2	OTTAWA	APRUDYVUS	2024-Oct-29	D-ICP-01	SM 3120B
ICP/OES (Liquid)	24	OTTAWA	NHOGAN	2024-Oct-23	D-ICP-01	SM 3120B
Mercury (Liquid)	26	OTTAWA	TBENNETT	2024-Oct-24	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	26	KINGSTON	JYEARWOOD	2024-Oct-29	NH3-001	SM 4500NH3
Phenols (Liquid)	26	KINGSTON	EHINCH	2024-Oct-28	PHEN-01	MECP E3179
TP & TKN (Liquid)	26	KINGSTON	YLIEN	2024-Oct-25	TPTKN-001	MECP E3516.2
TSS (Liquid)	26	KINGSTON	MCLOSS	2024-Oct-22	TSS-001	SM 2540D
Turbidity (Liquid)	26	OTTAWA	PLUSSIER	2024-Oct-23	A-TURB-01	SM 2130B
VOC-Volatiles Full (Water)	26	RICHMOND_HILL	FLENA	2024-Oct-27	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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			Client I.D.	7-90	7-90-II	11-90	32-93-I	32-93-II
			Sample I.D.	24-032634-1	24-032634-2	24-032634-3	24-032634-4	24-032634-5
			Date Collected	2024-10-15	2024-10-15	2024-10-16	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		6050	6660	393	267	264
TDS (Calc. from Cond.)	mg/L	3		8200	9900	615	501	500
Conductivity @25°C	uS/cm	1		14100	16900	1140	942	940
pH @25°C	pH units	-		7.74	7.70	7.75	7.90	7.99
Colour	TCU	2		638	1170	<2	<2	2
Turbidity	NTU	0.1		4130	116	170	423	153
Fluoride	mg/L	0.1		<7.0	<7.0	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		986	1860	117	116	117
Nitrate (N)	mg/L	0.05		<4.00	<4.00	<0.05	0.18	0.14
Nitrite (N)	mg/L	0.05		<4.00	<4.00	<0.05	<0.05	<0.05
Sulphate	mg/L	1		<15	<15	31	48	49
BOD5	mg/L	3		18	20	<3	<3	<3
Total Suspended Solids	mg/L	3		3560	180	42	540	206
Phosphorus (Total)	mg/L	0.01		5.71	3.53	0.04	0.19	0.12
Total Kjeldahl Nitrogen	mg/L	0.1		692	1530	12.9	0.7	1.1
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		740	1720	1.82	0.58	0.72
Ammonia (N)-unionized	mg/L	0.01		3.82	14.6	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		293	531	2.6	1.2	1.2
Cyanide (WAD)	mg/L	0.005		<0.034 (3.)	<0.034 (3.)	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		0.019	0.016	<0.001	<0.001	<0.001
COD	mg/L	5		1300	1740	14	35	28

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			Client I.D.	7-90	7-90-II	11-90	32-93-I	32-93-II
			Sample I.D.	24-032634-1	24-032634-2	24-032634-3	24-032634-4	24-032634-5
			Date Collected	2024-10-15	2024-10-15	2024-10-16	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Hardness (as CaCO3)	mg/L	0.02				477	451	448
Aluminum	mg/L	0.01				0.07	0.06	0.07
Barium	mg/L	0.001				0.295	0.155	0.092
Boron	mg/L	0.005				0.106	0.053	0.054
Calcium	mg/L	0.02				126	121	122
Iron	mg/L	0.005				1.80	0.308	0.005
Magnesium	mg/L	0.02				39.5	36.1	34.9
Manganese	mg/L	0.001				0.041	0.012	0.004
Phosphorus	mg/L	0.1				<0.1	<0.1	<0.1
Potassium	mg/L	0.1				4.0	2.7	3.0
Sodium	mg/L	0.2				41.4	20.0	20.8
Strontium	mg/L	0.001				1.17	0.877	0.870
Tin	mg/L	0.05				<0.05	<0.05	<0.05
Titanium	mg/L	0.005				<0.005	<0.005	<0.005
Zinc	mg/L	0.005				<0.005	<0.005	<0.005
Hardness (as CaCO3)	mg/L	0.02		2560	1240			
Aluminum (Total)	mg/L	0.01		7.00	0.68			
Barium (Total)	mg/L	0.001		1.23	0.353			
Calcium (Total)	mg/L	0.02		591	118			
Iron (Total)	mg/L	0.005		31.3	6.21			
Magnesium (Total)	mg/L	0.02		264	229			

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Parameter	Units	R.L.	Client I.D.	7-90	7-90-II	11-90	32-93-I	32-93-II
			Sample I.D.	24-032634-1	24-032634-2	24-032634-3	24-032634-4	24-032634-5
			Date Collected	2024-10-15	2024-10-15	2024-10-16	2024-10-16	2024-10-16
				-	-	-	-	-
Manganese (Total)	mg/L	0.001		0.876	0.267			
Phosphorus (Total)	mg/L	0.1		4.9	3.6			
Potassium (Total)	mg/L	0.1		371	592			
Sodium (Total)	mg/L	0.2		2550	1840			
Strontium (Total)	mg/L	0.001		1.47	1.49			
Tin (Total)	mg/L	0.05		0.07	<0.05			
Titanium (Total)	mg/L	0.005		0.416	0.085			
Zinc (Total)	mg/L	0.005		0.454	0.057			
Antimony	mg/L	0.0001				0.0001	0.0001	0.0002
Arsenic	mg/L	0.0001				<0.0001	<0.0001	0.0002
Beryllium	mg/L	0.0001				<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015				<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001				<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001				0.0002	0.0001	0.0002
Copper	mg/L	0.0001				0.0007	0.0005	0.0011
Lead	mg/L	0.00002				<0.00002	<0.00002	0.00007
Molybdenum	mg/L	0.0001				<0.0001	0.0002	0.0005
Nickel	mg/L	0.0002				0.0011	<0.0002	0.0006
Selenium	mg/L	0.001				<0.001	<0.001	<0.001
Silver	mg/L	0.0001				<0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005				<0.00005	<0.00005	<0.00005

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			Client I.D.	7-90	7-90-II	11-90	32-93-I	32-93-II
			Sample I.D.	24-032634-1	24-032634-2	24-032634-3	24-032634-4	24-032634-5
			Date Collected	2024-10-15	2024-10-15	2024-10-16	2024-10-16	2024-10-16
Parameter	Units	R.L.		-	-	-	-	-
Uranium	mg/L	0.00005			<0.00005	<0.00005	0.00029	
Vanadium	mg/L	0.0001			<0.0001	<0.0001	<0.0001	
Antimony (Total)	mg/L	0.0001	0.0039	0.0057				
Arsenic (Total)	mg/L	0.0001	0.0147	0.0269				
Beryllium (Total)	mg/L	0.0001	0.0005	<0.0001				
Cadmium (Total)	mg/L	0.000015	0.000880	0.000275				
Chromium (Total)	mg/L	0.001	0.079	0.059				
Cobalt (Total)	mg/L	0.0001	0.0242	0.0274				
Copper (Total)	mg/L	0.0001	0.0489	0.0055				
Lead (Total)	mg/L	0.00002	0.150	0.00624				
Molybdenum (Total)	mg/L	0.0001	0.0048	0.0040				
Nickel (Total)	mg/L	0.0002	0.104	0.132				
Selenium (Total)	mg/L	0.001	<0.001	<0.001				
Silver (Total)	mg/L	0.0001	<0.0001	<0.0001				
Thallium (Total)	mg/L	0.00005	0.00016	<0.00005				
Uranium (Total)	mg/L	0.00005	0.00119	0.00006				
Vanadium (Total)	mg/L	0.0001	0.0225	0.0126				
Chromium (VI)	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Mercury	mg/L	0.00002	0.00008	<0.00002	<0.00002	<0.00002	<0.00002	
Anion Sum	meq/L	-	149	186	11.8	9.60	9.61	
Cation Sum	meq/L	-	162	217	11.7	10.0	10.0	

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		Client I.D.	7-90	7-90-II	11-90	32-93-I	32-93-II
		Sample I.D.	24-032634-1	24-032634-2	24-032634-3	24-032634-4	24-032634-5
		Date Collected	2024-10-15	2024-10-15	2024-10-16	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
% Difference	%	-	4.40	7.90	0.479	2.15	2.04
Ion Ratio	-	-	0.916	0.854	1.01	0.958	0.960
Sodium Adsorption Ratio	-	-	24.6	19.4	0.825	0.410	0.427
TDS (Ion Sum Calc)	mg/L	1	8050	10300	599	505	507
TDS(calc.)/EC(actual)	-	-	0.572	0.612	0.524	0.536	0.539
Conductivity Calc	µmho/cm	-	10800	14900	1090	951	954
Conductivity Calc / Conductivity	-	-	0.769	0.884	0.952	1.01	1.01
Langelier Index(25°C)	-	-	1.95	1.95	0.972	0.946	1.04
Saturation pH (25°C)	-	-	5.79	5.75	6.78	6.95	6.95
pH (Client Data)	pH units	-	7.43	7.59	7.45	7.66	7.74
Temperature (Client Data)	°C	-	10.5	12.2	10.2	8.9	8.9

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			Client I.D.	43-93-I	43-93-II	44-93-I	44-93-II	45-93
			Sample I.D.	24-032634-6	24-032634-7	24-032634-8	24-032634-9	24-032634-10
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		267	479	243	376	377
TDS (Calc. from Cond.)	mg/L	3		456	528	473	853	724
Conductivity @25°C	uS/cm	1		863	990	893	1560	1340
pH @25°C	pH units	-		7.93	7.75	7.96	7.82	7.89
Colour	TCU	2		<2	<2	<2	<2	<2
Turbidity	NTU	0.1		187	149	11.6	1520	1680
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		89.1	16.1	113	254	187
Nitrate (N)	mg/L	0.05		0.05	<0.05	<0.05	1.07	0.36
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		54	40	52	24	16
BOD5	mg/L	3		<3	7	<3	<3	<3
Total Suspended Solids	mg/L	3		334	285	10	2140	3150
Phosphorus (Total)	mg/L	0.01		0.15	0.14	0.02	0.75	0.23
Total Kjeldahl Nitrogen	mg/L	0.1		0.7	2.6	0.7	1.2	0.3
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.69	0.27	0.68	0.97	0.14
Ammonia (N)-unionized	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		1.4	3.0	1.3	1.2	1.1
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		22	58	<5	43	22

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			Client I.D.	43-93-I	43-93-II	44-93-I	44-93-II	45-93
			Sample I.D.	24-032634-6	24-032634-7	24-032634-8	24-032634-9	24-032634-10
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Hardness (as CaCO3)	mg/L	0.02		437	535	429	467	316
Aluminum	mg/L	0.01		0.06	0.08	0.05	0.09	0.06
Barium	mg/L	0.001		0.074	0.138	0.192	0.115	0.070
Boron	mg/L	0.005		0.068	0.008	0.058	0.019	0.007
Calcium	mg/L	0.02		104	196	108	162	114
Iron	mg/L	0.005		0.504	0.015	0.636	<0.005	<0.005
Magnesium	mg/L	0.02		43.0	10.9	38.8	15.2	7.45
Manganese	mg/L	0.001		0.010	0.011	0.013	<0.001	<0.001
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		3.2	0.7	2.8	1.4	1.0
Sodium	mg/L	0.2		10.2	20.9	14.9	142	141
Strontium	mg/L	0.001		1.17	0.461	0.955	0.535	0.265
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		<0.0001	0.0002	<0.0001	0.0002	0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0001	0.0004	0.0001	0.0002	0.0002

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			Client I.D.	43-93-I	43-93-II	44-93-I	44-93-II	45-93
			Sample I.D.	24-032634-6	24-032634-7	24-032634-8	24-032634-9	24-032634-10
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Copper	mg/L	0.0001		0.0003	0.0006	0.0004	0.0023	0.0020
Lead	mg/L	0.00002		0.00005	0.00004	<0.00002	0.00002	<0.00002
Molybdenum	mg/L	0.0001		<0.0001	0.0002	0.0002	0.0004	0.0003
Nickel	mg/L	0.0002		<0.0002	0.0006	<0.0002	0.0004	0.0004
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		<0.00005	0.00070	<0.00005	0.00055	0.00035
Vanadium	mg/L	0.0001		<0.0001	0.0001	<0.0001	<0.0001	0.0002
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		8.97	10.9	9.15	15.3	13.2
Cation Sum	meq/L	-		9.35	11.6	9.40	15.6	12.5
% Difference	%	-		2.08	3.47	1.38	1.12	2.81
Ion Ratio	-	-		0.959	0.933	0.973	0.978	1.06
Sodium Adsorption Ratio	-	-		0.212	0.393	0.313	2.86	3.45
TDS (Ion Sum Calc)	mg/L	1		465	572	478	831	696
TDS(calc.)/EC(actual)	-	-		0.539	0.578	0.535	0.532	0.521
Conductivity Calc	µmho/cm	-		875	989	905	1500	1240
Conductivity Calc / Conductivity	-	-		1.01	0.999	1.01	0.957	0.927
Langelier Index(25°C)	-	-		0.911	1.25	0.917	1.11	1.04

Michelle Dubien
Data Specialist

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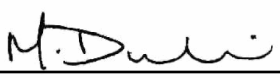
Parameter	Units	R.L.	Client I.D.	43-93-I	43-93-II	44-93-I	44-93-II	45-93
			Sample I.D.	24-032634-6	24-032634-7	24-032634-8	24-032634-9	24-032634-10
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
				-	-	-	-	-
Saturation pH (25°C)	-	-		7.02	6.50	7.04	6.71	6.85
pH (Client Data)	pH units	-		7.75	7.30	7.67	7.36	7.51
Temperature (Client Data)	°C	-		8.5	9.5	8.7	9.8	9.5



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			Client I.D.	53-98	55-98-I	55-98-II	56-02-I	57-02-II
			Sample I.D.	24-032634-11	24-032634-12	24-032634-13	24-032634-14	24-032634-15
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-15	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		359	242	236	222	331
TDS (Calc. from Cond.)	mg/L	3		1650	574	449	473	717
Conductivity @25°C	uS/cm	1		2950	1070	851	893	1320
pH @25°C	pH units	-		7.69	8.04	8.03	7.99	7.94
Colour	TCU	2		<2	<2	<2	<2	<2
Turbidity	NTU	0.1		31.3	15.4	16.9	52.9	46.0
Fluoride	mg/L	0.1		<0.7	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		791	173	111	135	190
Nitrate (N)	mg/L	0.05		<0.40	<0.05	<0.05	<0.05	0.19
Nitrite (N)	mg/L	0.05		<0.40	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		26	34	40	24	62
BOD5	mg/L	3		<3	<3	<3	<3	<3
Total Suspended Solids	mg/L	3		15	30	17	220	67
Phosphorus (Total)	mg/L	0.01		0.02	0.03	0.02	0.05	0.03
Total Kjeldahl Nitrogen	mg/L	0.1		0.6	1.6	0.4	0.6	0.3
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.33	1.39	0.34	0.53	0.12
Ammonia (N)-unionized	mg/L	0.01		<0.01	0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		0.9	1.0	1.2	1.1	1.7
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		29	9	6	5	10

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Parameter	Units	R.L.	Client I.D.	53-98	55-98-I	55-98-II	56-02-I	57-02-II
			Sample I.D.	24-032634-11	24-032634-12	24-032634-13	24-032634-14	24-032634-15
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-15	2024-10-16
				-	-	-	-	-
Hardness (as CaCO3)	mg/L	0.02		1050	378	415	418	328
Aluminum	mg/L	0.01		0.15	0.04	0.06	0.05	0.06
Barium	mg/L	0.001		1.42	0.289	0.266	0.171	0.117
Boron	mg/L	0.005		0.057	0.230	0.089	0.095	0.092
Calcium	mg/L	0.02		334	73.5	85.8	93.9	116
Iron	mg/L	0.005		1.98	0.120	0.923	0.611	0.222
Magnesium	mg/L	0.02		52.5	47.3	48.8	44.7	9.18
Manganese	mg/L	0.001		0.149	0.011	0.016	0.014	0.010
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		3.9	6.2	2.9	3.9	1.6
Sodium	mg/L	0.2		188	61.3	11.3	16.5	142
Strontium	mg/L	0.001		2.08	3.07	1.46	1.68	0.456
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0004	0.0001	0.0002	0.0009	0.0002

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			Client I.D.	53-98	55-98-I	55-98-II	56-02-I	57-02-II
			Sample I.D.	24-032634-11	24-032634-12	24-032634-13	24-032634-14	24-032634-15
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-15	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Copper	mg/L	0.0001		0.0021	0.0008	0.0004	0.0004	0.0021
Lead	mg/L	0.00002		<0.00004	<0.00002	0.00003	<0.00002	<0.00002
Molybdenum	mg/L	0.0001		<0.0001	0.0001	0.0002	<0.0001	0.0002
Nickel	mg/L	0.0002		<0.0002	<0.0002	<0.0002	<0.0002	0.0004
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	0.00073
Vanadium	mg/L	0.0001		0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		30.0	10.4	8.68	8.76	13.3
Cation Sum	meq/L	-		29.4	10.6	8.97	9.29	12.8
% Difference	%	-		0.967	0.646	1.62	2.95	1.84
Ion Ratio	-	-		1.02	0.987	0.968	0.943	1.04
Sodium Adsorption Ratio	-	-		2.52	1.37	0.241	0.351	3.41
TDS (Ion Sum Calc)	mg/L	1		1610	542	443	453	720
TDS(calc.)/EC(actual)	-	-		0.547	0.506	0.520	0.507	0.545
Conductivity Calc	µmho/cm	-		2870	1040	858	895	1260
Conductivity Calc / Conductivity	-	-		0.974	0.968	1.01	1.00	0.955
Langelier Index(25°C)	-	-		1.26	0.818	0.874	0.847	1.04

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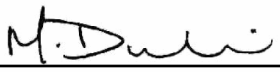
		Client I.D.	53-98	55-98-I	55-98-II	56-02-I	57-02-II
		Sample I.D.	24-032634-11	24-032634-12	24-032634-13	24-032634-14	24-032634-15
		Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-15	2024-10-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Saturation pH (25°C)	-	-	6.43	7.22	7.16	7.14	6.90
pH (Client Data)	pH units	-	7.16	7.69	7.89	7.36	7.57
Temperature (Client Data)	°C	-	8.6	7.5	7.2	9.1	11.9



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			Client I.D.	58-I	61-10-I	61-10-II	61-17-I	62-17-I
			Sample I.D.	24-032634-16	24-032634-17	24-032634-18	24-032634-19	24-032634-20
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		494	449	383	483	366
TDS (Calc. from Cond.)	mg/L	3		747	811	753	859	437
Conductivity @25°C	uS/cm	1		1380	1490	1390	1570	829
pH @25°C	pH units	-		7.65	7.74	7.80	7.76	7.95
Colour	TCU	2		2	2	<2	4	4
Turbidity	NTU	0.1		51.7	7.5	867	204	61.7
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		111	190	172	203	26.8
Nitrate (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	0.10
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		79	49	98	38	34
BOD5	mg/L	3		<3	<3	<3	<3	<3
Total Suspended Solids	mg/L	3		82	18	1790	1370	198
Phosphorus (Total)	mg/L	0.01		0.04	0.02	0.43	0.35	0.05
Total Kjeldahl Nitrogen	mg/L	0.1		0.5	1.3	0.7	1.6	0.7
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.14	0.59	0.42	0.64	0.32
Ammonia (N)-unionized	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.2		3.2	6.4	1.6	6.4	3.9
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		13	41	33	53	25

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	Client I.D.	58-I	61-10-I	61-10-II	61-17-I	62-17-I
	Sample I.D.	24-032634-16	24-032634-17	24-032634-18	24-032634-19	24-032634-20
	Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Hardness (as CaCO3)	mg/L	0.02	638	674	600	667	392
Aluminum	mg/L	0.01	0.09	0.08	0.08	0.08	0.07
Barium	mg/L	0.001	0.138	0.713	0.171	0.717	0.158
Boron	mg/L	0.005	0.197	0.166	0.025	0.167	0.063
Calcium	mg/L	0.02	212	161	178	158	140
Iron	mg/L	0.005	0.062	0.378	0.062	0.348	0.037
Magnesium	mg/L	0.02	26.3	66.0	37.7	66.2	10.3
Manganese	mg/L	0.001	0.029	0.021	0.065	0.021	0.005
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	2.5	5.2	2.9	5.3	1.4
Sodium	mg/L	0.2	60.0	76.3	52.1	76.1	38.6
Strontium	mg/L	0.001	0.806	2.07	0.723	2.08	0.783
Tin	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001
Arsenic	mg/L	0.0001	0.0004	<0.0001	0.0001	<0.0001	0.0004
Beryllium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0008	0.0002	0.0018	0.0002	0.0002



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			Client I.D.	58-I	61-10-I	61-10-II	61-17-I	62-17-I
			Sample I.D.	24-032634-16	24-032634-17	24-032634-18	24-032634-19	24-032634-20
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Copper	mg/L	0.0001		0.0014	0.0008	0.0013	0.0008	0.0013
Lead	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	0.00007
Molybdenum	mg/L	0.0001		0.0003	<0.0001	0.0009	<0.0001	0.0008
Nickel	mg/L	0.0002		0.0018	0.0058	0.0014	0.0060	0.0012
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00110	<0.00005	0.00123	<0.00005	0.00121
Vanadium	mg/L	0.0001		<0.0001	0.0004	0.0001	0.0004	0.0004
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		14.7	15.4	14.5	16.1	8.77
Cation Sum	meq/L	-		15.4	17.0	14.4	16.9	9.59
% Difference	%	-		2.62	5.12	0.561	2.26	4.44
Ion Ratio	-	-		0.949	0.903	1.01	0.956	0.915
Sodium Adsorption Ratio	-	-		1.03	1.28	0.926	1.28	0.848
TDS (Ion Sum Calc)	mg/L	1		788	819	771	837	471
TDS(calc.)/EC(actual)	-	-		0.573	0.550	0.556	0.532	0.568
Conductivity Calc	µmho/cm	-		1350	1480	1350	1510	834
Conductivity Calc / Conductivity	-	-		0.980	0.993	0.973	0.958	1.01
Langelier Index(25°C)	-	-		1.19	1.11	1.15	1.15	1.20

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			Client I.D.	58-I	61-10-I	61-10-II	61-17-I	62-17-I
			Sample I.D.	24-032634-16	24-032634-17	24-032634-18	24-032634-19	24-032634-20
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Saturation pH (25°C)	-	-		6.46	6.63	6.65	6.61	6.75
pH (Client Data)	pH units	-		7.10	7.08	7.06	7.05	7.27
Temperature (Client Data)	°C	-		11.9	10.2	11.3	10.2	11.8

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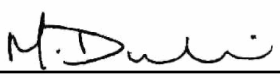
Parameter	Units	R.L.	Client I.D.	62-17-II	62-17-III	DUP	DUP-1	DUP-3
			Sample I.D.	24-032634-21	24-032634-22	24-032634-23	24-032634-24	24-032634-25
			Date Collected	2024-10-16	2024-10-16	2024-10-15	2024-10-16	2024-10-16
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		491	419	229	454	234
TDS (Calc. from Cond.)	mg/L	3		853	540	472	817	449
Conductivity @25°C	uS/cm	1		1560	1010	892	1500	850
pH @25°C	pH units	-		7.65	7.89	7.94	7.67	7.98
Colour	TCU	2		<2	<2	3	2	<2
Turbidity	NTU	0.1		76.8	203	106	6.3	18.7
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		184	46.6	136	198	110
Nitrate (N)	mg/L	0.05		<0.05	0.22	<0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		36	56	24	49	40
BOD5	mg/L	3		3	<3	<3	<3	<3
Total Suspended Solids	mg/L	3		198	950	174	15	11
Phosphorus (Total)	mg/L	0.01		0.05	0.10	0.05	0.02	<0.01
Total Kjeldahl Nitrogen	mg/L	0.1		1.6	0.4	0.6	1.4	0.5
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.74	0.19	0.55	0.64	0.38
Ammonia (N)-unionized	mg/L	0.01		<0.01	<0.01	0.03	0.02	0.02
Dissolved Organic Carbon	mg/L	0.2		6.7	2.2	1.2	6.5	1.3
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		44	12	8	32	<5



Michelle Dubien
Data Specialist

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			Client I.D.	62-17-II	62-17-III	DUP	DUP-1	DUP-3
			Sample I.D.	24-032634-21	24-032634-22	24-032634-23	24-032634-24	24-032634-25
			Date Collected	2024-10-16	2024-10-16	2024-10-15	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Hardness (as CaCO3)	mg/L	0.02		654	465	417	683	417
Aluminum	mg/L	0.01		0.08	0.06	0.07	0.08	0.05
Barium	mg/L	0.001		0.532	0.236	0.171	0.721	0.267
Boron	mg/L	0.005		0.148	0.025	0.094	0.167	0.087
Calcium	mg/L	0.02		168	123	93.9	164	86.3
Iron	mg/L	0.005		0.604	<0.005	0.606	0.384	0.906
Magnesium	mg/L	0.02		57.0	38.4	44.3	66.5	48.9
Manganese	mg/L	0.001		0.028	0.002	0.018	0.021	0.016
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		4.5	3.6	3.9	5.2	2.9
Sodium	mg/L	0.2		83.1	54.8	16.2	76.6	11.3
Strontium	mg/L	0.001		1.63	0.668	1.65	2.09	1.46
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	0.0002	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		<0.0001	0.0003	<0.0001	<0.0001	<0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0003	0.0002	0.0010	0.0002	0.0002

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	Client I.D.	62-17-II	62-17-III	DUP	DUP-1	DUP-3
	Sample I.D.	24-032634-21	24-032634-22	24-032634-23	24-032634-24	24-032634-25
	Date Collected	2024-10-16	2024-10-16	2024-10-15	2024-10-16	2024-10-16
Parameter	Units R.L.	-	-	-	-	-
Copper	mg/L 0.0001	0.0009	0.0011	0.0002	0.0006	0.0002
Lead	mg/L 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L 0.0001	<0.0001	0.0026	<0.0001	<0.0001	0.0002
Nickel	mg/L 0.0002	0.0061	0.0008	<0.0002	0.0059	<0.0002
Selenium	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium	mg/L 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L 0.00005	<0.00005	0.00064	<0.00005	<0.00005	<0.00005
Vanadium	mg/L 0.0001	0.0004	0.0002	<0.0001	0.0004	<0.0001
Chromium (VI)	mg/L 0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L -	15.7	10.9	8.92	15.7	8.59
Cation Sum	meq/L -	16.9	11.8	9.24	17.2	9.00
% Difference	% -	3.67	4.17	1.78	4.71	2.32
Ion Ratio	- -	0.929	0.920	0.965	0.910	0.955
Sodium Adsorption Ratio	- -	1.41	1.11	0.345	1.27	0.241
TDS (Ion Sum Calc)	mg/L 1	828	575	457	833	441
TDS(calc.)/EC(actual)	- -	0.530	0.568	0.513	0.556	0.518
Conductivity Calc	µmho/cm -	1480	1010	900	1500	856
Conductivity Calc / Conductivity	- -	0.949	0.997	1.01	1.00	1.01
Langelier Index(25°C)	- -	1.07	1.13	0.811	1.05	0.822

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		Client I.D.	62-17-II	62-17-III	DUP	DUP-1	DUP-3
		Sample I.D.	24-032634-21	24-032634-22	24-032634-23	24-032634-24	24-032634-25
		Date Collected	2024-10-16	2024-10-16	2024-10-15	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Saturation pH (25°C)	-	-	6.58	6.76	7.13	6.62	7.16
pH (Client Data)	pH units	-	6.92	7.27			
Temperature (Client Data)	°C	-	9.8	12.6			

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			Client I.D.	DUP-6
			Sample I.D.	24-032634-26
			Date Collected	2024-10-16
Parameter	Units	R.L.		-
Alkalinity(CaCO3) to pH4.5	mg/L	5		378
TDS (Calc. from Cond.)	mg/L	3		731
Conductivity @25°C	uS/cm	1		1350
pH @25°C	pH units	-		7.88
Colour	TCU	2		<2
Turbidity	NTU	0.1		1430
Fluoride	mg/L	0.1		<0.1
Chloride	mg/L	0.5		199
Nitrate (N)	mg/L	0.05		0.45
Nitrite (N)	mg/L	0.05		<0.05
Sulphate	mg/L	1		15
BOD5	mg/L	3		<3
Total Suspended Solids	mg/L	3		2380
Phosphorus (Total)	mg/L	0.01		0.69
Total Kjeldahl Nitrogen	mg/L	0.1		0.5
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.15
Ammonia (N)-unionized	mg/L	0.01		<0.01
Dissolved Organic Carbon	mg/L	0.2		1.2
Cyanide (WAD)	mg/L	0.005		<0.005
Phenolics	mg/L	0.001		<0.001
COD	mg/L	5		58

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			Client I.D.	DUP-6
			Sample I.D.	24-032634-26
			Date Collected	2024-10-16
Parameter	Units	R.L.		-
Hardness (as CaCO3)	mg/L	0.02		345
Aluminum	mg/L	0.01		0.06
Barium	mg/L	0.001		0.074
Boron	mg/L	0.005		0.009
Calcium	mg/L	0.02		124
Iron	mg/L	0.005		0.074
Magnesium	mg/L	0.02		8.58
Manganese	mg/L	0.001		0.003
Phosphorus	mg/L	0.1		<0.1
Potassium	mg/L	0.1		1.0
Sodium	mg/L	0.2		139
Strontium	mg/L	0.001		0.291
Tin	mg/L	0.05		<0.05
Titanium	mg/L	0.005		<0.005
Zinc	mg/L	0.005		<0.005
Antimony	mg/L	0.0001		<0.0001
Arsenic	mg/L	0.0001		<0.0001
Beryllium	mg/L	0.0001		<0.0001
Cadmium	mg/L	0.000015		<0.000015
Chromium	mg/L	0.001		<0.001
Cobalt	mg/L	0.0001		0.0003

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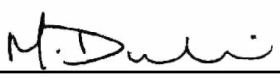
			Client I.D.	DUP-6
			Sample I.D.	24-032634-26
			Date Collected	2024-10-16
Parameter	Units	R.L.		-
Copper	mg/L	0.0001		0.0015
Lead	mg/L	0.00002		<0.00002
Molybdenum	mg/L	0.0001		0.0004
Nickel	mg/L	0.0002		0.0004
Selenium	mg/L	0.001		<0.001
Silver	mg/L	0.0001		<0.0001
Thallium	mg/L	0.00005		<0.00005
Uranium	mg/L	0.00005		0.00040
Vanadium	mg/L	0.0001		0.0001
Chromium (VI)	mg/L	0.01		<0.01
Mercury	mg/L	0.00002		<0.00002
Anion Sum	meq/L	-		13.5
Cation Sum	meq/L	-		13.0
% Difference	%	-		1.98
Ion Ratio	-	-		1.04
Sodium Adsorption Ratio	-	-		3.26
TDS (Ion Sum Calc)	mg/L	1		716
TDS(calc.)/EC(actual)	-	-		0.531
Conductivity Calc	µmho/cm	-		1280
Conductivity Calc / Conductivity	-	-		0.949
Langelier Index(25°C)	-	-		1.07



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Parameter	Units	R.L.	Client I.D.	DUP-6
			Sample I.D.	24-032634-26
			Date Collected	2024-10-16
			-	-
Saturation pH (25°C)	-	-		6.81

Parameter	Units	R.L.	Client I.D.	7-90	7-90-II	11-90	32-93-I	32-93-II
			Sample I.D.	24-032634-1	24-032634-2	24-032634-3	24-032634-4	24-032634-5
			Date Collected	2024-10-15	2024-10-15	2024-10-16	2024-10-16	2024-10-16
			-	-	-	-	-	-
Benzene	µg/L	0.5		3.2	4.2	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		0.8	40.4	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		0.5	5.9	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		9	97	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		45.8	141	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		36.6	43.8	<0.5	<0.5	<0.5

Parameter	Units	R.L.	Client I.D.	43-93-I	43-93-II	44-93-I	44-93-II	45-93
			Sample I.D.	24-032634-6	24-032634-7	24-032634-8	24-032634-9	24-032634-10
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
			-	-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

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Parameter	Units	R.L.	Client I.D.	53-98	55-98-I	55-98-II	56-02-I	57-02-II
			Sample I.D.	24-032634-11	24-032634-12	24-032634-13	24-032634-14	24-032634-15
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-15	2024-10-16
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	R.L.	Client I.D.	58-I	61-10-I	61-10-II	61-17-I	62-17-I
			Sample I.D.	24-032634-16	24-032634-17	24-032634-18	24-032634-19	24-032634-20
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

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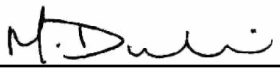
Parameter	Units	R.L.	Client I.D.	62-17-II	62-17-III	DUP	DUP-1	DUP-3
			Sample I.D.	24-032634-21	24-032634-22	24-032634-23	24-032634-24	24-032634-25
			Date Collected	2024-10-16	2024-10-16	2024-10-15	2024-10-16	2024-10-16
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	R.L.	Client I.D.	DUP-6
			Sample I.D.	24-032634-26
			Date Collected	2024-10-16
				-
Benzene	µg/L	0.5		<0.5
Ethylbenzene	µg/L	0.5		<0.5
Toluene	µg/L	0.5		<0.5
Xylene, m,p-	µg/L	1		<1
Xylene, m,p,o-	µg/L	1.1		<1.1
Xylene, o-	µg/L	0.5		<0.5

Comments:

3. Elevated RL due to sample matrix interferences/dilution

TKN and ammonia are within acceptable analytical limits



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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: Lindsay OPS

REPORT No: 24-032702 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
285 Dalton Ave
Kingston, ON K7K 6Z1

Attention: Kayla Pantaleo

DATE RECEIVED: 2024-Oct-18
DATE REPORTED: 2024-Nov-06
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Lindsay OPS GW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	50	OTTAWA	LMACGREGOR	2024-Oct-24	A-IC-01	SM 4110B
COD (Liquid)	50	KINGSTON	DCASSIDY	2024-Oct-23	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	50	OTTAWA	SBOUDREAU	2024-Oct-25	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
DOC/DIC (Liquid)	50	OTTAWA	SLOZO	2024-Nov-04	C-OC-01	EPA 415.2
Ion Balance (Calc.)	50	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	50	OTTAWA	STAILLON	2024-Oct-25	D-CRVI-01	MECP E3056
ICP/MS (Liquid)	50	OTTAWA	AOZKAYMAK	2024-Oct-24	D-ICPMS-01	EPA 200.8
ICP/OES (Liquid)	50	OTTAWA	APRUDYVUS	2024-Oct-23	D-ICP-01	SM 3120B
Mercury (Liquid)	50	OTTAWA	TBENNETT	2024-Oct-23	D-HG-02	SM 3112B
Ammonia (Liquid)	50	KINGSTON	JYEARWOOD	2024-Oct-29	NH3-001	SM 4500NH3
Phenols (Liquid)	50	KINGSTON	EHINCH	2024-Oct-28	PHEN-01	MECP E3179
TP & TKN (Liquid)	50	KINGSTON	KDIBBITS	2024-Oct-23	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	50	RICHMOND_HILL	CBURKE	2024-Oct-30	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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			Client I.D.	12-91-I	12-91-II	13-91-I	13-91-II	14-07
			Sample I.D.	24-032702-1	24-032702-2	24-032702-3	24-032702-4	24-032702-5
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		241	422	187	383	283
TDS (Calc. from Cond.)	mg/L	3		345	468	368	1130	345
Conductivity @25°C	uS/cm	1		664	885	709	2050	664
pH @25°C	pH units	-		8.02	7.66	8.02	7.80	7.83
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.7	<0.1
Chloride	mg/L	0.5		33.7	10.8	95.1	370	22.3
Nitrate (N)	mg/L	0.05		0.13	0.05	<0.05	<0.40	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.40	<0.05
Sulphate	mg/L	1		44	41	18	34	21
Phosphorus (Total)	mg/L	0.01		0.12	0.07	0.12	0.45	1.24
Total Kjeldahl Nitrogen	mg/L	0.1		0.5	0.9	1.2	1.7	1.3
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.39	0.45	1.26	0.76	0.60
Dissolved Organic Carbon	mg/L	0.2		2.7	9.2	2.1	3.3	2.4
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		29	94	31	145	133
Hardness (as CaCO3)	mg/L	0.02		322	477	323	462	305
Aluminum	mg/L	0.01		0.02	0.06	0.02	0.05	0.04
Barium	mg/L	0.001		0.127	0.064	0.120	0.305	0.056
Boron	mg/L	0.005		0.051	0.041	0.102	0.031	0.011
Calcium	mg/L	0.02		76.0	166	58.0	142	111
Iron	mg/L	0.005		0.010	4.08	0.280	<0.005	0.010

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Data Specialist

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			Client I.D.	12-91-I	12-91-II	13-91-I	13-91-II	14-07
			Sample I.D.	24-032702-1	24-032702-2	24-032702-3	24-032702-4	24-032702-5
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
Parameter	**Units**	**R.L.**		-	-	-	-	-
Magnesium	mg/L	0.02		32.1	15.2	43.2	25.8	6.53
Manganese	mg/L	0.001		0.002	0.944	0.006	0.016	0.007
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		2.3	1.0	3.9	2.8	0.9
Sodium	mg/L	0.2		10.6	6.0	12.6	233	3.7
Strontium	mg/L	0.001		0.798	0.452	1.66	1.02	0.202
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		0.0001	0.0001	<0.0001	0.0001	0.0002
Arsenic	mg/L	0.0001		0.0005	0.0018	<0.0001	0.0005	0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0001	0.0008	<0.0001	0.0004	0.0002
Copper	mg/L	0.0001		0.0007	0.0003	0.0004	0.0003	0.0006
Lead	mg/L	0.00002		<0.00002	0.00004	<0.00002	0.00007	0.00003
Molybdenum	mg/L	0.0001		0.0005	0.0003	<0.0001	0.0002	0.0002
Nickel	mg/L	0.0002		0.0009	0.0009	0.0004	0.0004	0.0002
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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Data Specialist

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Parameter	Units	R.L.	Client I.D.	12-91-I	12-91-II	13-91-I	13-91-II	14-07
			Sample I.D.	24-032702-1	24-032702-2	24-032702-3	24-032702-4	24-032702-5
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
				-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00087	0.00617	<0.00005	0.00053	0.00125
Vanadium	mg/L	0.0001		<0.0001	0.0002	<0.0001	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		6.70	9.60	6.79	18.8	6.71
Cation Sum	meq/L	-		6.97	10.1	7.15	19.4	6.28
% Difference	%	-		1.99	2.42	2.58	1.71	3.29
Ion Ratio	-	-		0.961	0.953	0.950	0.966	1.07
Sodium Adsorption Ratio	-	-		0.256	0.121	0.304	4.71	0.0917
TDS (Ion Sum Calc)	mg/L	1		344	498	343	1040	335
TDS(calc.)/EC(actual)	-	-		0.518	0.563	0.484	0.506	0.505
Conductivity Calc	µmho/cm	-		644	860	693	1850	608
Conductivity Calc / Conductivity	-	-		0.970	0.972	0.978	0.904	0.915
Langelier Index(25°C)	-	-		0.831	1.04	0.602	1.02	0.876
Saturation pH (25°C)	-	-		7.19	6.62	7.42	6.78	6.95
pH (Client Data)	pH units	-		7.43	7.48	7.52	7.26	7.52
Temperature (Client Data)	°C	-		12.8	13.4	9.7	12.1	11.3

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			Client I.D.	15-91-I	15-91-II	16-91-I	17-91-I	17-91-II
			Sample I.D.	24-032702-6	24-032702-7	24-032702-8	24-032702-9	24-032702-10
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		497	527	374	282	361
TDS (Calc. from Cond.)	mg/L	3		608	527	951	377	391
Conductivity @25°C	uS/cm	1		1130	989	1730	724	749
pH @25°C	pH units	-		7.65	7.33	7.73	7.88	7.74
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		22.4	3.4	304	33.2	2.1
Nitrate (N)	mg/L	0.05		0.70	<0.05	<0.05	<0.05	0.40
Nitrite (N)	mg/L	0.05		0.32	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		72	2	2	45	31
Phosphorus (Total)	mg/L	0.01		1.21	0.54	1.00	0.12	0.58
Total Kjeldahl Nitrogen	mg/L	0.1		6.4	1.2	3.2	0.5	0.5
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		3.61	0.66	0.91	0.30	0.34
Dissolved Organic Carbon	mg/L	0.2		7.3	10.5	14.1	3.2	2.7
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		124	59	176	19	60
Hardness (as CaCO3)	mg/L	0.02		585	577	565	342	388
Aluminum	mg/L	0.01		0.05	0.06	0.05	0.04	0.08
Barium	mg/L	0.001		0.137	0.067	0.560	0.065	0.043
Boron	mg/L	0.005		0.086	0.070	0.287	0.014	0.012
Calcium	mg/L	0.02		188	205	167	115	144
Iron	mg/L	0.005		0.132	49.0	9.48	0.476	0.083

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			Client I.D.	15-91-I	15-91-II	16-91-I	17-91-I	17-91-II
			Sample I.D.	24-032702-6	24-032702-7	24-032702-8	24-032702-9	24-032702-10
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
Parameter	Units	R.L.		-	-	-	-	-
Magnesium	mg/L	0.02		27.9	15.6	35.8	13.4	6.95
Manganese	mg/L	0.001		0.044	0.250	0.034	0.022	0.009
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		2.8	0.7	4.8	1.0	0.7
Sodium	mg/L	0.2		31.7	6.4	131	20.4	6.7
Strontium	mg/L	0.001		0.439	0.483	0.647	0.265	0.249
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		0.0003	<0.0001	0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0003	0.0050	0.0006	0.0001	0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0003	0.0005	0.0003	0.0002	0.0003
Copper	mg/L	0.0001		0.0007	0.0003	0.0002	0.0005	0.0007
Lead	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	0.00013
Molybdenum	mg/L	0.0001		0.0113	0.0005	0.0006	0.0005	0.0002
Nickel	mg/L	0.0002		0.0017	0.0010	0.0119	0.0009	0.0003
Selenium	mg/L	0.001		<0.001	<0.001	0.002	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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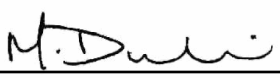
Parameter	Units	R.L.	Client I.D.	15-91-I	15-91-II	16-91-I	17-91-I	17-91-II
			Sample I.D.	24-032702-6	24-032702-7	24-032702-8	24-032702-9	24-032702-10
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
				-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00089	<0.00005	<0.00005	0.00044	0.00045
Vanadium	mg/L	0.0001		<0.0001	0.0006	0.0003	<0.0001	0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		12.1	10.7	16.1	7.51	7.95
Cation Sum	meq/L	-		13.2	11.8	17.7	7.77	8.06
% Difference	%	-		4.10	5.17	4.58	1.73	0.693
Ion Ratio	-	-		0.921	0.902	0.912	0.966	0.986
Sodium Adsorption Ratio	-	-		0.571	0.116	2.40	0.480	0.148
TDS (Ion Sum Calc)	mg/L	1		647	549	880	397	410
TDS(calc.)/EC(actual)	-	-		0.572	0.555	0.507	0.549	0.547
Conductivity Calc	µmho/cm	-		1100	975	1610	715	720
Conductivity Calc / Conductivity	-	-		0.971	0.986	0.928	0.988	0.962
Langelier Index(25°C)	-	-		1.15	0.891	1.03	0.938	0.992
Saturation pH (25°C)	-	-		6.50	6.44	6.70	6.94	6.75
pH (Client Data)	pH units	-		7.38	7.13	7.20	7.28	7.46
Temperature (Client Data)	°C	-		9.3	10.3	12.8	11.0	11.2



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			Client I.D.	18-91	19-91	20-91-I	20-91-II	20-91-III
			Sample I.D.	24-032702-11	24-032702-12	24-032702-13	24-032702-14	24-032702-15
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		307	331	247	341	358
TDS (Calc. from Cond.)	mg/L	3		377	433	351	455	493
Conductivity @25°C	uS/cm	1		724	822	676	861	929
pH @25°C	pH units	-		7.94	7.90	8.04	7.98	7.84
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	0.1	<0.1
Chloride	mg/L	0.5		34.1	36.4	55.4	76.2	76.6
Nitrate (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		20	41	6	2	9
Phosphorus (Total)	mg/L	0.01		0.24	0.30	0.10	0.07	0.03
Total Kjeldahl Nitrogen	mg/L	0.1		0.6	1.0	9.2	1.5	1.1
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.40	0.94	8.56	0.64	0.73
Dissolved Organic Carbon	mg/L	0.2		1.8	3.0	3.2	6.6	7.7
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		23	25	25	33	21
Hardness (as CaCO3)	mg/L	0.02		315	413	175	390	402
Aluminum	mg/L	0.01		0.03	0.04	0.01	0.02	0.04
Barium	mg/L	0.001		0.134	0.128	0.267	1.66	0.272
Boron	mg/L	0.005		0.013	0.017	0.167	0.164	0.085
Calcium	mg/L	0.02		106	137	35.8	82.7	118
Iron	mg/L	0.005		0.010	0.690	0.796	0.295	1.59

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			Client I.D.	18-91	19-91	20-91-I	20-91-II	20-91-III
			Sample I.D.	24-032702-11	24-032702-12	24-032702-13	24-032702-14	24-032702-15
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
Parameter	Units	R.L.		-	-	-	-	-
Magnesium	mg/L	0.02		12.3	17.0	20.7	44.5	25.9
Manganese	mg/L	0.001		0.003	0.029	0.153	0.011	0.074
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		1.8	1.9	6.8	4.2	2.8
Sodium	mg/L	0.2		19.7	21.9	55.5	34.3	38.2
Strontium	mg/L	0.001		0.242	0.310	1.89	2.25	0.540
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		<0.0001	0.0001	<0.0001	<0.0001	<0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0002	0.0005	0.0001	0.0001	0.0002
Copper	mg/L	0.0001		0.0008	0.0006	0.0007	0.0009	0.0006
Lead	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.0001		0.0005	0.0003	0.0003	<0.0001	<0.0001
Nickel	mg/L	0.0002		0.0003	0.0004	0.0006	0.0028	0.0039
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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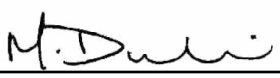
Parameter	Units	R.L.	Client I.D.	18-91	19-91	20-91-I	20-91-II	20-91-III
			Sample I.D.	24-032702-11	24-032702-12	24-032702-13	24-032702-14	24-032702-15
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
				-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00032	0.00077	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		7.51	8.50	6.61	9.03	9.51
Cation Sum	meq/L	-		7.19	9.30	6.17	9.45	9.86
% Difference	%	-		2.18	4.52	3.48	2.28	1.83
Ion Ratio	-	-		1.04	0.914	1.07	0.955	0.964
Sodium Adsorption Ratio	-	-		0.484	0.469	1.83	0.755	0.830
TDS (Ion Sum Calc)	mg/L	1		378	455	329	450	488
TDS(calc.)/EC(actual)	-	-		0.522	0.554	0.487	0.522	0.525
Conductivity Calc	µmho/cm	-		684	819	604	853	897
Conductivity Calc / Conductivity	-	-		0.944	0.996	0.893	0.991	0.965
Langelier Index(25°C)	-	-		0.998	1.10	0.543	0.968	1.00
Saturation pH (25°C)	-	-		6.94	6.80	7.50	7.01	6.84
pH (Client Data)	pH units	-		7.53	7.55	7.76	7.41	7.23
Temperature (Client Data)	°C	-		11.5	10.2	9.2	9.4	9.7



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			Client I.D.	21-91-I	21-91-II	21-91-III	23-07	25-91
			Sample I.D.	24-032702-16	24-032702-17	24-032702-18	24-032702-19	24-032702-20
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-15	2024-10-15
Parameter	Units	R.L.		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		467	411	514	232	439
TDS (Calc. from Cond.)	mg/L	3		1060	795	1380	285	730
Conductivity @25°C	uS/cm	1		1920	1460	2490	550	1350
pH @25°C	pH units	-		7.77	7.92	7.72	8.01	7.79
Fluoride	mg/L	0.1		<0.7	1.3	<0.7	<0.1	<0.1
Chloride	mg/L	0.5		297	221	474	14.7	156
Nitrate (N)	mg/L	0.05		<0.40	<0.05	<0.40	<0.05	<0.05
Nitrite (N)	mg/L	0.05		<0.40	<0.05	<0.40	<0.05	<0.05
Sulphate	mg/L	1		14	2	14	29	17
Phosphorus (Total)	mg/L	0.01		0.04	0.04	0.05	0.81	0.08
Total Kjeldahl Nitrogen	mg/L	0.1		3.2	2.6	3.7	0.6	0.7
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		1.61	1.86	2.64	0.52	0.47
Dissolved Organic Carbon	mg/L	0.2		16.6	8.1	11.3	2.3	3.9
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		88	37	79	46	23
Hardness (as CaCO3)	mg/L	0.02		699	455	928	297	466
Aluminum	mg/L	0.01		0.06	0.02	0.05	0.08	0.05
Barium	mg/L	0.001		0.960	4.20	0.943	0.087	0.112
Boron	mg/L	0.005		0.258	0.544	0.585	0.013	0.027
Calcium	mg/L	0.02		190	83.1	181	100	167
Iron	mg/L	0.005		6.39	2.46	2.56	0.146	0.193

Michelle Dubien
Data Specialist

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Parameter	Units	R.L.	Client I.D.	21-91-I	21-91-II	21-91-III	23-07	25-91
			Sample I.D.	24-032702-16	24-032702-17	24-032702-18	24-032702-19	24-032702-20
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-15	2024-10-15
				-	-	-	-	-
Magnesium	mg/L	0.02		54.5	60.1	116	11.2	11.6
Manganese	mg/L	0.001		0.033	0.009	0.016	0.026	0.027
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		6.4	7.9	11.7	1.8	3.1
Sodium	mg/L	0.2		132	132	162	6.0	101
Strontium	mg/L	0.001		1.94	6.29	11.0	0.272	0.461
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		0.0001	0.0001	<0.0001	<0.0001	0.0001
Arsenic	mg/L	0.0001		0.0002	0.0006	<0.0001	0.0002	0.0004
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0003	0.0001	0.0003	0.0004	0.0004
Copper	mg/L	0.0001		0.0003	0.0002	0.0002	0.0005	0.0004
Lead	mg/L	0.00002		<0.00002	<0.00002	<0.00002	0.00015	0.00003
Molybdenum	mg/L	0.0001		<0.0001	0.0002	<0.0001	0.0012	0.0005
Nickel	mg/L	0.0002		0.0124	0.0032	0.0071	0.0008	0.0007
Selenium	mg/L	0.001		0.003	0.003	0.006	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Michelle Dubien
Data Specialist

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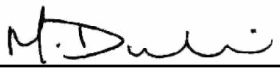
Parameter	Units	R.L.	Client I.D.	21-91-I	21-91-II	21-91-III	23-07	25-91
			Sample I.D.	24-032702-16	24-032702-17	24-032702-18	24-032702-19	24-032702-20
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-15	2024-10-15
				-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	0.00017	0.00055
Vanadium	mg/L	0.0001		0.0003	<0.0001	0.0002	0.0002	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		18.0	14.6	23.9	5.64	13.5
Cation Sum	meq/L	-		20.2	15.3	26.3	6.26	13.8
% Difference	%	-		5.83	2.42	4.61	5.21	0.904
Ion Ratio	-	-		0.890	0.953	0.912	0.901	0.982
Sodium Adsorption Ratio	-	-		2.17	2.68	2.31	0.152	2.04
TDS (Ion Sum Calc)	mg/L	1		981	756	1270	302	720
TDS(calc.)/EC(actual)	-	-		0.510	0.518	0.510	0.549	0.535
Conductivity Calc	µmho/cm	-		1770	1390	2290	562	1280
Conductivity Calc / Conductivity	-	-		0.917	0.952	0.921	1.02	0.950
Langelier Index(25°C)	-	-		1.22	0.971	1.18	0.934	1.17
Saturation pH (25°C)	-	-		6.55	6.95	6.54	7.08	6.62
pH (Client Data)	pH units	-		7.24	7.67	7.29	7.72	7.23
Temperature (Client Data)	°C	-		10.3	8.7	10.2	10.2	12.2



Michelle Dubien
Data Specialist

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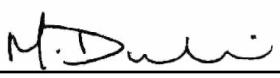
	Client I.D.	25-96	27-93	28-93	29-93	30-93
	Sample I.D.	24-032702-21	24-032702-22	24-032702-23	24-032702-24	24-032702-25
	Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
Parameter	Units R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L 5	433	212	276	341	445
TDS (Calc. from Cond.)	mg/L 3	747	258	1610	794	754
Conductivity @25°C	uS/cm 1	1380	499	2890	1460	1390
pH @25°C	pH units -	8.14	8.04	7.98	7.88	7.75
Fluoride	mg/L 0.1	2.3	0.1	1.3	<0.1	<0.1
Chloride	mg/L 0.5	194	8.4	663	240	182
Nitrate (N)	mg/L 0.05	<0.05	<0.05	<0.40	<0.05	<0.05
Nitrite (N)	mg/L 0.05	<0.05	<0.05	<0.40	<0.05	<0.05
Sulphate	mg/L 1	<1	35	14	39	15
Phosphorus (Total)	mg/L 0.01	0.03	0.02	0.05	4.42	0.09
Total Kjeldahl Nitrogen	mg/L 0.1	3.5	0.4	5.3	1.1	6.6
Ammonia (N)-Total (NH3+NH4)	mg/L 0.05	3.51	0.59	4.99	0.36	6.89
Dissolved Organic Carbon	mg/L 0.2	1.7	2.0	1.6	3.6	5.4
Phenolics	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L 5	14	<5	62	266	26
Hardness (as CaCO3)	mg/L 0.02	165	268	575	421	466
Aluminum	mg/L 0.01	<0.01	0.02	0.02	0.04	0.03
Barium	mg/L 0.001	0.260	0.090	1.53	0.102	0.374
Boron	mg/L 0.005	1.44	0.039	1.02	0.051	0.093
Calcium	mg/L 0.02	26.6	71.9	95.9	154	130
Iron	mg/L 0.005	0.299	0.579	4.23	0.147	3.06



Michelle Dubien
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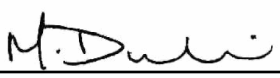
Parameter	Units	R.L.	Client I.D.	25-96	27-93	28-93	29-93	30-93
			Sample I.D.	24-032702-21	24-032702-22	24-032702-23	24-032702-24	24-032702-25
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
				-	-	-	-	-
Magnesium	mg/L	0.02		24.0	21.4	81.5	8.60	34.6
Manganese	mg/L	0.001		0.003	0.010	0.105	0.282	0.144
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		11.9	2.2	16.6	2.2	3.5
Sodium	mg/L	0.2		235	5.4	311	139	98.9
Strontium	mg/L	0.001		3.55	0.513	13.2	0.506	0.518
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0001	<0.0001	0.0012	0.0004	0.0020
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		<0.0001	<0.0001	0.0002	0.0009	0.0015
Copper	mg/L	0.0001		0.0002	0.0003	0.0003	0.0002	0.0004
Lead	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.0001		0.0002	0.0003	0.0005	0.0004	0.0005
Nickel	mg/L	0.0002		0.0004	0.0005	0.0003	0.0006	0.0050
Selenium	mg/L	0.001		0.003	<0.001	0.016	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001



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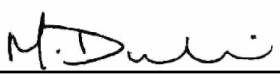
Parameter	Units	R.L.	Client I.D.	25-96	27-93	28-93	29-93	30-93
			Sample I.D.	24-032702-21	24-032702-22	24-032702-23	24-032702-24	24-032702-25
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
				-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	0.00039	0.00017
Vanadium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		14.2	5.23	24.6	14.4	14.3
Cation Sum	meq/L	-		13.9	5.68	26.0	14.5	13.9
% Difference	%	-		1.05	4.19	2.76	0.509	1.63
Ion Ratio	-	-		1.02	0.920	0.946	0.990	1.03
Sodium Adsorption Ratio	-	-		7.96	0.145	5.64	2.96	1.99
TDS (Ion Sum Calc)	mg/L	1		753	273	1350	788	734
TDS(calc.)/EC(actual)	-	-		0.548	0.547	0.468	0.540	0.529
Conductivity Calc	µmho/cm	-		1330	510	2480	1410	1310
Conductivity Calc / Conductivity	-	-		0.966	1.02	0.859	0.967	0.944
Langelier Index(25°C)	-	-		0.718	0.781	0.890	1.12	1.03
Saturation pH (25°C)	-	-		7.42	7.26	7.09	6.76	6.72
pH (Client Data)	pH units	-		7.67	7.65	7.54	7.91	7.29
Temperature (Client Data)	°C	-		9.5	8.9	10.2	12.7	12.3



Michelle Dubien
Data Specialist

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			Client I.D.	31-93	35-93-I	35-93-II	36-93	37-93-I
			Sample I.D.	24-032702-26	24-032702-27	24-032702-28	24-032702-29	24-032702-30
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		433	180	277	239	250
TDS (Calc. from Cond.)	mg/L	3		759	243	552	343	667
Conductivity @25°C	uS/cm	1		1400	470	1030	660	1240
pH @25°C	pH units	-		7.79	8.11	7.91	8.03	7.96
Fluoride	mg/L	0.1		<0.1	0.4	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		187	25.4	147	40.0	223
Nitrate (N)	mg/L	0.05		0.29	0.09	<0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05		0.11	0.08	<0.05	<0.05	<0.05
Sulphate	mg/L	1		15	21	23	46	55
Phosphorus (Total)	mg/L	0.01		0.49	0.06	0.86	0.23	0.03
Total Kjeldahl Nitrogen	mg/L	0.1		9.8	0.5	0.5	0.7	0.9
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		8.15	0.39	0.17	0.49	0.87
Dissolved Organic Carbon	mg/L	0.2		5.7	2.2	2.8	2.6	2.5
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		62	<5	135	39	7
Hardness (as CaCO3)	mg/L	0.02		501	239	360	346	508
Aluminum	mg/L	0.01		0.04	<0.01	0.03	0.03	0.04
Barium	mg/L	0.001		0.437	0.167	0.102	0.269	0.308
Boron	mg/L	0.005		0.098	0.138	0.028	0.049	0.051
Calcium	mg/L	0.02		141	45.4	121	91.2	122
Iron	mg/L	0.005		10.2	0.010	<0.005	1.12	1.45

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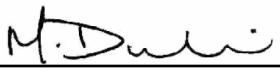
Parameter	Units	R.L.	Client I.D.	31-93	35-93-I	35-93-II	36-93	37-93-I
			Sample I.D.	24-032702-26	24-032702-27	24-032702-28	24-032702-29	24-032702-30
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
				-	-	-	-	-
Magnesium	mg/L	0.02		36.0	30.5	13.7	28.6	49.1
Manganese	mg/L	0.001		0.360	0.002	<0.001	0.022	0.021
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		4.1	3.8	1.9	2.1	3.3
Sodium	mg/L	0.2		98.7	7.2	75.6	12.2	52.1
Strontium	mg/L	0.001		0.525	1.06	0.422	0.833	1.42
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0039	0.0003	<0.0001	0.0001	0.0002
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0015	<0.0001	0.0002	0.0001	0.0002
Copper	mg/L	0.0001		0.0003	0.0006	0.0007	0.0004	0.0008
Lead	mg/L	0.00002		0.00003	<0.00002	<0.00002	0.00003	<0.00002
Molybdenum	mg/L	0.0001		0.0004	0.0005	0.0003	0.0002	0.0002
Nickel	mg/L	0.0002		0.0043	0.0005	0.0002	0.0007	0.0010
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001



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			Client I.D.	31-93	35-93-I	35-93-II	36-93	37-93-I
			Sample I.D.	24-032702-26	24-032702-27	24-032702-28	24-032702-29	24-032702-30
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
Parameter	**Units**	**R.L.**		-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00012	0.00011	0.00040	<0.00005	<0.00005
Vanadium	mg/L	0.0001		<0.0001	0.0001	<0.0001	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		14.3	4.77	10.1	6.88	12.4
Cation Sum	meq/L	-		15.0	5.21	10.5	7.57	12.6
% Difference	%	-		2.49	4.43	1.86	4.80	0.757
Ion Ratio	-	-		0.951	0.915	0.964	0.908	0.985
Sodium Adsorption Ratio	-	-		1.92	0.204	1.74	0.286	1.01
TDS (Ion Sum Calc)	mg/L	1		754	242	548	365	656
TDS(calc.)/EC(actual)	-	-		0.540	0.515	0.531	0.553	0.531
Conductivity Calc	µmho/cm	-		1340	475	1020	681	1230
Conductivity Calc / Conductivity	-	-		0.957	1.01	0.985	1.03	0.999
Langelier Index(25°C)	-	-		1.09	0.589	0.964	0.917	0.974
Saturation pH (25°C)	-	-		6.70	7.52	6.95	7.11	6.99
pH (Client Data)	pH units	-		7.33	7.69	7.47	7.49	7.39
Temperature (Client Data)	°C	-		12.5	11.9	12.8	11.7	9.6

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Data Specialist

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			Client I.D.	37-93-II	38-93	39-93-I	39-93-II	45-95-I
			Sample I.D.	24-032702-31	24-032702-32	24-032702-33	24-032702-34	24-032702-35
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		387	301	246	454	321
TDS (Calc. from Cond.)	mg/L	3		831	343	532	983	612
Conductivity @25°C	uS/cm	1		1520	661	998	1790	1140
pH @25°C	pH units	-		7.89	7.96	7.96	7.82	7.91
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		231	11.5	148	273	113
Nitrate (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		43	30	35	26	107
Phosphorus (Total)	mg/L	0.01		2.77	0.20	0.02	0.17	0.05
Total Kjeldahl Nitrogen	mg/L	0.1		1.6	0.7	0.6	1.0	1.4
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.32	0.65	0.59	0.79	1.03
Dissolved Organic Carbon	mg/L	0.2		3.2	3.2	2.5	4.1	5.7
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		309	18	8	49	15
Hardness (as CaCO3)	mg/L	0.02		479	348	463	509	458
Aluminum	mg/L	0.01		0.05	0.04	0.03	0.06	0.04
Barium	mg/L	0.001		0.258	0.150	0.261	0.145	0.044
Boron	mg/L	0.005		0.053	0.029	0.074	0.049	0.125
Calcium	mg/L	0.02		161	111	97.7	182	135
Iron	mg/L	0.005		1.94	0.566	1.22	0.278	2.29

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Parameter	Units	R.L.	Client I.D.	37-93-II	38-93	39-93-I	39-93-II	45-95-I
			Sample I.D.	24-032702-31	24-032702-32	24-032702-33	24-032702-34	24-032702-35
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-16
				-	-	-	-	-
Magnesium	mg/L	0.02		18.7	17.2	53.3	13.4	29.1
Manganese	mg/L	0.001		0.162	0.049	0.019	0.034	0.044
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		2.6	1.2	3.0	6.7	2.8
Sodium	mg/L	0.2		140	7.8	30.3	184	70.4
Strontium	mg/L	0.001		0.585	0.446	1.48	0.513	0.430
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0007	0.0003	<0.0001	0.0003	0.0002
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0008	0.0002	0.0003	0.0005	0.0003
Copper	mg/L	0.0001		0.0004	0.0006	0.0006	0.0004	0.0004
Lead	mg/L	0.00002		0.00003	<0.00002	<0.00002	0.00005	0.00002
Molybdenum	mg/L	0.0001		0.0002	0.0002	0.0002	0.0001	0.0001
Nickel	mg/L	0.0002		0.0008	0.0008	0.0007	0.0004	0.0017
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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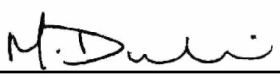
Parameter	Units	R.L.	Client I.D.	37-93-II	38-93	39-93-I	39-93-II	45-95-I
			Sample I.D.	24-032702-31	24-032702-32	24-032702-33	24-032702-34	24-032702-35
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-16
				-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00037	0.00012	<0.00005	0.00068	0.00006
Vanadium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		15.1	6.96	9.82	17.3	11.8
Cation Sum	meq/L	-		15.8	7.37	10.8	18.4	12.4
% Difference	%	-		2.29	2.83	4.51	2.99	2.46
Ion Ratio	-	-		0.955	0.945	0.914	0.942	0.952
Sodium Adsorption Ratio	-	-		2.78	0.182	0.613	3.56	1.43
TDS (Ion Sum Calc)	mg/L	1		830	360	516	958	652
TDS(calc.)/EC(actual)	-	-		0.545	0.545	0.517	0.535	0.573
Conductivity Calc	µmho/cm	-		1470	654	1000	1690	1130
Conductivity Calc / Conductivity	-	-		0.965	0.990	1.00	0.942	0.993
Langelier Index(25°C)	-	-		1.19	1.03	0.878	1.23	1.08
Saturation pH (25°C)	-	-		6.70	6.93	7.08	6.59	6.83
pH (Client Data)	pH units	-		7.44	7.57	7.31	7.18	7.41
Temperature (Client Data)	°C	-		12.9	12.6	10.7	12.6	10.5



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			Client I.D.	45-95-II	46-95-I	46-95-II	47-96-I	47-96-II
			Sample I.D.	24-032702-36	24-032702-37	24-032702-38	24-032702-39	24-032702-40
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		293	592	608	394	391
TDS (Calc. from Cond.)	mg/L	3		434	979	1000	630	851
Conductivity @25°C	uS/cm	1		824	1780	1830	1170	1560
pH @25°C	pH units	-		7.86	7.62	7.67	7.83	7.93
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		80.5	218	222	137	229
Nitrate (N)	mg/L	0.05		0.23	0.10	<0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		3	2	2	26	2
Phosphorus (Total)	mg/L	0.01		0.38	0.05	0.04	0.03	1.39
Total Kjeldahl Nitrogen	mg/L	0.1		0.9	32.2	39.3	1.8	38.2
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.38	28.3	38.9	1.25	38.3
Dissolved Organic Carbon	mg/L	0.2		5.2	9.1	9.7	6.0	6.5
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		46	32	34	14	91
Hardness (as CaCO3)	mg/L	0.02		298	590	585	476	347
Aluminum	mg/L	0.01		0.03	0.05	0.05	0.04	0.03
Barium	mg/L	0.001		0.027	1.12	1.18	0.452	0.126
Boron	mg/L	0.005		0.031	0.103	0.103	0.088	0.110
Calcium	mg/L	0.02		106	174	171	127	104
Iron	mg/L	0.005		0.006	14.1	15.6	1.73	12.8

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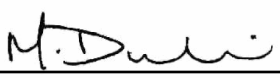
Parameter	Units	R.L.	Client I.D.	45-95-II	46-95-I	46-95-II	47-96-I	47-96-II
			Sample I.D.	24-032702-36	24-032702-37	24-032702-38	24-032702-39	24-032702-40
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
				-	-	-	-	-
Magnesium	mg/L	0.02		7.82	38.0	38.2	38.8	21.3
Manganese	mg/L	0.001		0.025	0.093	0.091	0.074	0.229
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		4.6	8.8	9.6	2.4	11.4
Sodium	mg/L	0.2		35.8	119	120	68.8	135
Strontium	mg/L	0.001		0.275	0.728	0.738	0.639	0.384
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		<0.0001	0.0001	0.0001	<0.0001	0.0046
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0002	0.0007	0.0008	0.0002	0.0007
Copper	mg/L	0.0001		0.0030	0.0003	0.0002	0.0003	0.0003
Lead	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.0001		0.0002	<0.0001	<0.0001	<0.0001	0.0010
Nickel	mg/L	0.0002		0.0005	0.0023	0.0023	0.0022	0.0020
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001



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			Client I.D.	45-95-II	46-95-I	46-95-II	47-96-I	47-96-II
			Sample I.D.	24-032702-36	24-032702-37	24-032702-38	24-032702-39	24-032702-40
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
Parameter	**Units**	**R.L.**		-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00024	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	0.0001		<0.0001	0.0003	0.0003	<0.0001	0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		8.21	18.0	18.5	12.3	14.3
Cation Sum	meq/L	-		7.64	18.0	18.0	12.7	13.8
% Difference	%	-		3.62	0.124	1.20	1.60	1.85
Ion Ratio	-	-		1.08	1.00	1.02	0.969	1.04
Sodium Adsorption Ratio	-	-		0.903	2.14	2.17	1.37	3.15
TDS (Ion Sum Calc)	mg/L	1		415	929	944	638	750
TDS(calc.)/EC(actual)	-	-		0.504	0.521	0.517	0.546	0.481
Conductivity Calc	µmho/cm	-		766	1600	1610	1160	1330
Conductivity Calc / Conductivity	-	-		0.929	0.895	0.881	0.990	0.851
Langelier Index(25°C)	-	-		0.892	1.13	1.18	1.06	1.06
Saturation pH (25°C)	-	-		6.97	6.49	6.49	6.77	6.87
pH (Client Data)	pH units	-		7.37	7.00	7.66	7.16	7.49
Temperature (Client Data)	°C	-		12.6	10.6	10.9	10.6	10.6

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	Client I.D.	48-96-I	48-96-II	49-96-I	49-96-II	49-96-III
	Sample I.D.	24-032702-41	24-032702-42	24-032702-43	24-032702-44	24-032702-45
	Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
Parameter	Units R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L 5	285	427	300	266	331
TDS (Calc. from Cond.)	mg/L 3	400	623	522	538	552
Conductivity @25°C	uS/cm 1	765	1160	979	1010	1030
pH @25°C	pH units -	8.12	7.90	8.31	8.10	7.91
Fluoride	mg/L 0.1	<0.1	<0.1	0.7	<0.1	<0.1
Chloride	mg/L 0.5	58.5	105	128	126	105
Nitrate (N)	mg/L 0.05	<0.05	<0.05	<0.05	0.35	0.07
Nitrite (N)	mg/L 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L 1	15	8	24	60	34
Phosphorus (Total)	mg/L 0.01	0.02	3.12	0.04	0.03	0.07
Total Kjeldahl Nitrogen	mg/L 0.1	1.1	1.9	3.3	0.6	0.6
Ammonia (N)-Total (NH3+NH4)	mg/L 0.05	0.71	0.43	2.92	0.42	0.40
Dissolved Organic Carbon	mg/L 0.2	4.0	6.6	2.5	2.9	3.6
Phenolics	mg/L 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L 5	6	316	<5	5	12
Hardness (as CaCO3)	mg/L 0.02	336	534	167	448	433
Aluminum	mg/L 0.01	0.02	0.04	<0.01	0.03	0.04
Barium	mg/L 0.001	1.09	0.789	0.024	0.127	0.089
Boron	mg/L 0.005	0.130	0.076	0.519	0.696	0.091
Calcium	mg/L 0.02	70.8	147	29.3	119	150
Iron	mg/L 0.005	0.028	3.61	0.035	0.138	<0.005

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Parameter	Units	R.L.	Client I.D.	48-96-I	48-96-II	49-96-I	49-96-II	49-96-III
			Sample I.D.	24-032702-41	24-032702-42	24-032702-43	24-032702-44	24-032702-45
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
				-	-	-	-	-
Magnesium	mg/L	0.02		38.8	40.6	22.7	36.4	14.1
Manganese	mg/L	0.001		0.005	0.062	0.004	0.008	<0.001
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		3.5	3.1	8.6	2.6	1.3
Sodium	mg/L	0.2		31.7	47.5	133	36.9	46.0
Strontium	mg/L	0.001		1.25	0.901	2.09	0.798	0.483
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0002	0.0002	<0.0001	0.0001	0.0001
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0001	0.0002	<0.0001	0.0002	0.0002
Copper	mg/L	0.0001		0.0007	0.0007	0.0002	0.0007	0.0008
Lead	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.0001		0.0001	<0.0001	<0.0001	0.0010	0.0004
Nickel	mg/L	0.0002		0.0017	0.0029	0.0002	0.0009	0.0003
Selenium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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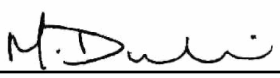
Parameter	Units	R.L.	Client I.D.	48-96-I	48-96-II	49-96-I	49-96-II	49-96-III
			Sample I.D.	24-032702-41	24-032702-42	24-032702-43	24-032702-44	24-032702-45
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
				-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		0.00009	<0.00005	<0.00005	0.00011	0.00067
Vanadium	mg/L	0.0001		0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		7.66	11.7	10.1	10.2	10.3
Cation Sum	meq/L	-		8.22	13.0	9.39	10.7	10.7
% Difference	%	-		3.55	5.49	3.81	2.40	2.03
Ion Ratio	-	-		0.931	0.896	1.08	0.953	0.960
Sodium Adsorption Ratio	-	-		0.752	0.895	4.49	0.758	0.962
TDS (Ion Sum Calc)	mg/L	1		389	612	526	543	549
TDS(calc.)/EC(actual)	-	-		0.509	0.528	0.537	0.539	0.532
Conductivity Calc	µmho/cm	-		741	1120	943	1010	998
Conductivity Calc / Conductivity	-	-		0.969	0.969	0.963	0.998	0.967
Langelier Index(25°C)	-	-		0.973	1.23	0.791	1.13	1.13
Saturation pH (25°C)	-	-		7.15	6.67	7.52	6.97	6.78
pH (Client Data)	pH units	-		7.64	7.37	8.11	7.78	7.72
Temperature (Client Data)	°C	-		11.3	10.3	8.7	8.9	9.3



Michelle Dubien
Data Specialist

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			Client I.D.	59-05	60-05	DUP-2	DUP-4	DUP-5
			Sample I.D.	24-032702-46	24-032702-47	24-032702-48	24-032702-49	24-032702-50
			Date Collected	2024-10-15	2024-10-15	2024-10-16	2024-10-15	2024-10-15
Parameter	**Units**	**R.L.**		-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		597	296	504	358	186
TDS (Calc. from Cond.)	mg/L	3		967	530	1470	382	244
Conductivity @25°C	uS/cm	1		1760	993	2640	733	471
pH @25°C	pH units	-		7.66	8.02	7.91	7.83	8.16
Fluoride	mg/L	0.1		<0.1	<0.1	<0.7	<0.1	0.4
Chloride	mg/L	0.5		204	122	524	2.1	23.5
Nitrate (N)	mg/L	0.05		<0.05	<0.05	<0.40	0.41	0.07
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.40	<0.05	0.09
Sulphate	mg/L	1		1	17	15	29	19
Phosphorus (Total)	mg/L	0.01		0.08	0.13	0.04	0.49	0.05
Total Kjeldahl Nitrogen	mg/L	0.1		26.2	0.5	3.9	0.5	0.5
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		21.5	0.18	2.56	0.27	0.27
Dissolved Organic Carbon	mg/L	0.2		9.4	3.7	12.1	4.5	2.5
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		34	25	69	47	7
Hardness (as CaCO3)	mg/L	0.02		604	420	939	392	243
Aluminum	mg/L	0.01		0.05	0.03	0.05	0.05	0.01
Barium	mg/L	0.001		1.29	0.214	0.953	0.044	0.165
Boron	mg/L	0.005		0.101	0.022	0.585	0.013	0.139
Calcium	mg/L	0.02		177	103	183	145	45.9
Iron	mg/L	0.005		13.6	0.441	1.90	0.048	0.009

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Parameter	Units	R.L.	Client I.D.	59-05	60-05	DUP-2	DUP-4	DUP-5
			Sample I.D.	24-032702-46	24-032702-47	24-032702-48	24-032702-49	24-032702-50
			Date Collected	2024-10-15	2024-10-15	2024-10-16	2024-10-15	2024-10-15
				-	-	-	-	-
Magnesium	mg/L	0.02		39.1	39.4	118	7.13	31.2
Manganese	mg/L	0.001		0.080	0.010	0.014	0.012	0.003
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1		8.2	3.0	11.8	0.7	3.8
Sodium	mg/L	0.2		116	39.2	159	6.6	7.2
Strontium	mg/L	0.001		0.760	0.536	11.2	0.250	1.06
Tin	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	0.0003
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0007	0.0004	0.0002	0.0003	<0.0001
Copper	mg/L	0.0001		0.0002	0.0008	<0.0001	0.0004	0.0003
Lead	mg/L	0.00002		<0.00002	<0.00002	<0.00002	0.00007	<0.00002
Molybdenum	mg/L	0.0001		<0.0001	<0.0001	<0.0001	0.0002	0.0003
Nickel	mg/L	0.0002		0.0021	0.0007	0.0070	0.0002	0.0002
Selenium	mg/L	0.001		<0.001	<0.001	0.005	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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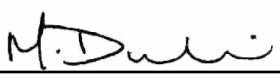
Parameter	Units	R.L.	Client I.D.	59-05	60-05	DUP-2	DUP-4	DUP-5
			Sample I.D.	24-032702-46	24-032702-47	24-032702-48	24-032702-49	24-032702-50
			Date Collected	2024-10-15	2024-10-15	2024-10-16	2024-10-15	2024-10-15
				-	-	-	-	-
Thallium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005		<0.00005	<0.00005	<0.00005	0.00049	0.00011
Vanadium	mg/L	0.0001		0.0005	<0.0001	0.0002	0.0001	0.0001
Chromium (VI)	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		17.7	9.70	25.2	7.85	4.82
Cation Sum	meq/L	-		18.1	10.2	26.4	8.15	5.29
% Difference	%	-		1.04	2.52	2.32	1.86	4.69
Ion Ratio	-	-		0.979	0.951	0.955	0.964	0.910
Sodium Adsorption Ratio	-	-		2.06	0.832	2.26	0.146	0.201
TDS (Ion Sum Calc)	mg/L	1		918	501	1310	408	244
TDS(calc.)/EC(actual)	-	-		0.521	0.505	0.498	0.556	0.517
Conductivity Calc	µmho/cm	-		1580	956	2370	721	479
Conductivity Calc / Conductivity	-	-		0.896	0.963	0.899	0.983	1.02
Langelier Index(25°C)	-	-		1.18	1.04	1.36	1.08	0.659
Saturation pH (25°C)	-	-		6.48	6.98	6.55	6.75	7.50
pH (Client Data)	pH units	-		7.17	7.40			
Temperature (Client Data)	°C	-		10.3	12.1			



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			Client I.D.	12-91-I	12-91-II	13-91-I	13-91-II	14-07
			Sample I.D.	24-032702-1	24-032702-2	24-032702-3	24-032702-4	24-032702-5
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
Parameter	**Units**	**R.L.**		-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

			Client I.D.	15-91-I	15-91-II	16-91-I	17-91-I	17-91-II
			Sample I.D.	24-032702-6	24-032702-7	24-032702-8	24-032702-9	24-032702-10
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
Parameter	**Units**	**R.L.**		-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

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Parameter	Units	R.L.	Client I.D.	18-91	19-91	20-91-I	20-91-II	20-91-III
			Sample I.D.	24-032702-11	24-032702-12	24-032702-13	24-032702-14	24-032702-15
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	R.L.	Client I.D.	21-91-I	21-91-II	21-91-III	23-07	25-91
			Sample I.D.	24-032702-16	24-032702-17	24-032702-18	24-032702-19	24-032702-20
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-15	2024-10-15
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

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Parameter	Units	R.L.	Client I.D.	25-96	27-93	28-93	29-93	30-93
			Sample I.D.	24-032702-21	24-032702-22	24-032702-23	24-032702-24	24-032702-25
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	R.L.	Client I.D.	31-93	35-93-I	35-93-II	36-93	37-93-I
			Sample I.D.	24-032702-26	24-032702-27	24-032702-28	24-032702-29	24-032702-30
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

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Parameter	Units	R.L.	Client I.D.	37-93-II	38-93	39-93-I	39-93-II	45-95-I
			Sample I.D.	24-032702-31	24-032702-32	24-032702-33	24-032702-34	24-032702-35
			Date Collected	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-16
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	R.L.	Client I.D.	45-95-II	46-95-I	46-95-II	47-96-I	47-96-II
			Sample I.D.	24-032702-36	24-032702-37	24-032702-38	24-032702-39	24-032702-40
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

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Parameter	Units	R.L.	Client I.D.	48-96-I	48-96-II	49-96-I	49-96-II	49-96-III
			Sample I.D.	24-032702-41	24-032702-42	24-032702-43	24-032702-44	24-032702-45
			Date Collected	2024-10-16	2024-10-16	2024-10-16	2024-10-16	2024-10-16
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	R.L.	Client I.D.	59-05	60-05	DUP-2	DUP-4	DUP-5
			Sample I.D.	24-032702-46	24-032702-47	24-032702-48	24-032702-49	24-032702-50
			Date Collected	2024-10-15	2024-10-15	2024-10-16	2024-10-15	2024-10-15
				-	-	-	-	-
Benzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p-	µg/L	1		<1	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	1.1		<1.1	<1.1	<1.1	<1.1	<1.1
Xylene, o-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

Elevated RLs due to sample matrix interferences
TKN and ammonia are within acceptable analytical limits

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Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-035833 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Nov-15
DATE REPORTED: 2024-Nov-28
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay OPS
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	LMACGREGOR	2024-Nov-19	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	JWOLFE2	2024-Nov-18	BOD-001	SM 5210B
COD (Liquid)	1	KINGSTON	DCASSIDY	2024-Nov-19	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2024-Nov-18	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
DOC/DIC (Liquid)	1	OTTAWA	SLOZO	2024-Nov-27	C-OC-01	EPA 415.2
Ion Balance (Calc.)	1	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	1	OTTAWA	STAILLON	2024-Nov-20	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	1	OTTAWA	AOZKAYMAK	2024-Nov-19	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	APRUDYVUS	2024-Nov-20	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2024-Nov-19	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	1	KINGSTON	JYEARWOOD	2024-Nov-21	NH3-001	SM 4500NH3
Phenols (Liquid)	1	KINGSTON	MCLOSS	2024-Nov-20	PHEN-01	MECP E3179
TP & TKN (Liquid)	1	KINGSTON	YLIEN	2024-Nov-25	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2024-Nov-20	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

Michelle Dubien
Data Specialist

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		Client I.D.	LPC 1
		Sample I.D.	24-035833-1
		Date Collected	2024-11-14
Parameter	**Units**	**R.L.**	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	765
TDS (Calc. from Cond.)	mg/L	3	1100
Conductivity @25°C	uS/cm	1	2000
pH @25°C	pH units	-	7.49
Fluoride	mg/L	0.1	<0.7
Chloride	mg/L	0.5	237
Nitrate (N)	mg/L	0.05	<0.40
Nitrite (N)	mg/L	0.05	<0.40
Sulphate	mg/L	1	29
BOD5	mg/L	3	4
Phosphorus (Total)	mg/L	0.01	0.11
Total Kjeldahl Nitrogen	mg/L	0.1	33.3
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	27.5
Dissolved Organic Carbon	mg/L	0.8	10.7
Phenolics	mg/L	0.001	<0.001
COD	mg/L	5	83
Hardness (as CaCO3)	mg/L	0.02	632
Aluminum (Total)	mg/L	0.01	0.07
Barium (Total)	mg/L	0.001	0.419
Beryllium (Total)	mg/L	0.001	<0.001
Boron (Total)	mg/L	0.005	0.536

Michelle Dubien
Data Specialist

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Parameter	Units	R.L.	Client I.D.: LPC 1 Sample I.D.: 24-035833-1 Date Collected: 2024-11-14 -
Cadmium (Total)	mg/L	0.005	<0.005
Calcium (Total)	mg/L	0.02	179
Chromium (Total)	mg/L	0.002	0.002
Cobalt (Total)	mg/L	0.005	<0.005
Copper (Total)	mg/L	0.002	<0.002
Iron (Total)	mg/L	0.005	13.2
Lead (Total)	mg/L	0.02	<0.02
Magnesium (Total)	mg/L	0.02	45.1
Manganese (Total)	mg/L	0.001	0.345
Molybdenum (Total)	mg/L	0.01	<0.01
Nickel (Total)	mg/L	0.01	<0.01
Phosphorus (Total)	mg/L	0.1	<0.1
Potassium (Total)	mg/L	0.1	26.4
Silver (Total)	mg/L	0.005	<0.005
Sodium (Total)	mg/L	0.2	146
Strontium (Total)	mg/L	0.001	0.766
Tin (Total)	mg/L	0.05	<0.05
Titanium (Total)	mg/L	0.005	<0.005
Vanadium (Total)	mg/L	0.005	<0.005
Zinc (Total)	mg/L	0.005	0.012
Antimony (Total)	mg/L	0.0005	<0.0005

Michelle Dubien
Data Specialist

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		Client I.D.	LPC 1
		Sample I.D.	24-035833-1
		Date Collected	2024-11-14
Parameter	**Units**	**R.L.**	-
Arsenic (Total)	mg/L	0.0005	0.0021
Selenium (Total)	mg/L	0.005	<0.005
Thallium (Total)	mg/L	0.0003	<0.0003
Uranium (Total)	mg/L	0.0003	<0.0003
Chromium (VI)	mg/L	0.01	<0.01
Mercury	mg/L	0.00002	<0.00002
Anion Sum	meq/L	-	22.6
Cation Sum	meq/L	-	20.4
% Difference	%	-	5.05
Ion Ratio	-	-	1.11
Sodium Adsorption Ratio	-	-	2.53
TDS (Ion Sum Calc)	mg/L	1	1130
TDS(calc.)/EC(actual)	-	-	0.567
Conductivity Calc	µmho/cm	-	1850
Conductivity Calc / Conductivity	-	-	0.926
Langelier Index(25°C)	-	-	1.11
Saturation pH (25°C)	-	-	6.38
pH (Client Data)	pH units	-	9.03
Temperature (Client Data)	°C	-	9.6

Michelle Dubien
Data Specialist

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			Client I.D.	LPC 1
			Sample I.D.	24-035833-1
			Date Collected	2024-11-14
Parameter	Units	R.L.		-
Benzene	µg/L	0.5		1.5
Ethylbenzene	µg/L	0.5		<0.5
Toluene	µg/L	0.5		<0.5
Xylene, m,p-	µg/L	1		<1
Xylene, m,p,o-	µg/L	1.1		<1.1
Xylene, o-	µg/L	0.5		<0.5

Elevated RLs due to sample matrix interferences

Michelle Dubien
Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-038967 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Dec-19
DATE REPORTED: 2024-Dec-30
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Lindsay OPS
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	LMACGREGOR	2024-Dec-20	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	JWOLFE2	2024-Dec-23	BOD-001	SM 5210B
COD (Liquid)	1	KINGSTON	EHINCH	2024-Dec-27	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SLOZO	2024-Dec-23	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
DOC/DIC (Liquid)	1	OTTAWA	SLOZO	2024-Dec-23	C-OC-01	EPA 415.2
Ion Balance (Calc.)	1	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	1	OTTAWA	STAILLON	2024-Dec-24	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	1	OTTAWA	AOZKAYMAK	2024-Dec-23	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	NHOGAN	2024-Dec-23	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2024-Dec-23	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	1	KINGSTON	DCASSIDY	2024-Dec-24	NH3-001	SM 4500NH3
Phenols (Liquid)	1	KINGSTON	EHINCH	2024-Dec-23	PHEN-01	MECP E3179
TP & TKN (Liquid)	1	KINGSTON	YLIEN	2024-Dec-27	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2024-Dec-25	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
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Michelle Dubien
Data Specialist

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			Client I.D.	LPC
			Sample I.D.	24-038967-1
			Date Collected	2024-12-18
Parameter	Units	R.L.		-
Alkalinity(CaCO3) to pH4.5	mg/L	5		602
TDS (Calc. from Cond.)	mg/L	3		955
Conductivity @25°C	uS/cm	1		1740
pH @25°C	pH units	-		7.13
Fluoride	mg/L	0.1		<0.1
Chloride	mg/L	0.5		198
Nitrate (N)	mg/L	0.05		0.09
Nitrite (N)	mg/L	0.05		<0.05
Sulphate	mg/L	1		50
BOD5	mg/L	3		6
Phosphorus (Total)	mg/L	0.01		0.02
Total Kjeldahl Nitrogen	mg/L	0.1		18.5
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		14.5
Dissolved Organic Carbon	mg/L	0.8		5.9
Phenolics	mg/L	0.001		<0.001
COD	mg/L	5		54
Hardness (as CaCO3)	mg/L	0.02		667
Aluminum (Total)	mg/L	0.01		0.12
Barium (Total)	mg/L	0.001		0.346
Beryllium (Total)	mg/L	0.001		<0.001
Boron (Total)	mg/L	0.005		0.368

Michelle Dubien
Data Specialist

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			Client I.D.	LPC
			Sample I.D.	24-038967-1
			Date Collected	2024-12-18
Parameter	Units	R.L.		-
Cadmium (Total)	mg/L	0.005		<0.005
Calcium (Total)	mg/L	0.02		205
Chromium (Total)	mg/L	0.002		<0.002
Cobalt (Total)	mg/L	0.005		<0.005
Copper (Total)	mg/L	0.002		<0.002
Iron (Total)	mg/L	0.005		13.8
Lead (Total)	mg/L	0.02		<0.02
Magnesium (Total)	mg/L	0.02		37.5
Manganese (Total)	mg/L	0.001		0.470
Molybdenum (Total)	mg/L	0.01		<0.01
Nickel (Total)	mg/L	0.01		0.01
Phosphorus (Total)	mg/L	0.1		<0.1
Potassium (Total)	mg/L	0.1		16.9
Silver (Total)	mg/L	0.005		<0.005
Sodium (Total)	mg/L	0.2		138
Strontium (Total)	mg/L	0.001		0.786
Tin (Total)	mg/L	0.05		<0.05
Titanium (Total)	mg/L	0.005		<0.005
Vanadium (Total)	mg/L	0.005		<0.005
Zinc (Total)	mg/L	0.005		0.005
Antimony (Total)	mg/L	0.0005		<0.0005

Michelle Dubien
Data Specialist

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			Client I.D.	LPC
			Sample I.D.	24-038967-1
			Date Collected	2024-12-18
Parameter	Units	R.L.		-
Arsenic (Total)	mg/L	0.0005		0.0009
Selenium (Total)	mg/L	0.005		<0.005
Thallium (Total)	mg/L	0.0003		<0.0003
Uranium (Total)	mg/L	0.0003		<0.0003
Chromium (VI)	mg/L	0.01		<0.01
Mercury	mg/L	0.00002		<0.00002
Anion Sum	meq/L	-		18.7
Cation Sum	meq/L	-		21.5
% Difference	%	-		7.13
Ion Ratio	-	-		0.867
Sodium Adsorption Ratio	-	-		2.33
TDS (Ion Sum Calc)	mg/L	1		1040
TDS(calc.)/EC(actual)	-	-		0.597
Conductivity Calc	µmho/cm	-		1770
Conductivity Calc / Conductivity	-	-		1.01
Langelier Index(25°C)	-	-		0.709
Saturation pH (25°C)	-	-		6.42
pH (Client Data)	pH units	-		6.86
Temperature (Client Data)	°C	-		7.9

Michelle Dubien
Data Specialist

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		Client I.D.	LPC
		Sample I.D.	24-038967-1
		Date Collected	2024-12-18
Parameter	**Units**	**R.L.**	-
Benzene	µg/L	0.5	1.3
Ethylbenzene	µg/L	0.5	<0.5
Toluene	µg/L	0.5	<0.5
Xylene, m,p-	µg/L	1	<1
Xylene, m,p,o-	µg/L	1.1	<1.1
Xylene, o-	µg/L	0.5	<0.5

Michelle Dubien
Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-025253 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

CADUCEON Environmental Laboratories
112 Commerce Park Dr Unit L
Barrie, ON L4N 8W8

Attention: Bonnie Ferguson

DATE RECEIVED: 2024-Aug-16
DATE REPORTED: 2024-Aug-29
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Lindsay OPS SW
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	5	OTTAWA	PCURIEL	2024-Aug-20	A-IC-01	SM 4110B
BOD5 (Liquid)	5	KINGSTON	JWOLFE2	2024-Aug-22	BOD-001	SM 5210B
COD (Liquid)	5	KINGSTON	DCASSIDY	2024-Aug-27	COD-001	SM 5220D
Colour (Liquid)	5	OTTAWA	STAILLON	2024-Aug-20	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	5	OTTAWA	SBOUDREAU	2024-Aug-20	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide WAD (Liquid)	5	KINGSTON	EHINCH	2024-Aug-21	CN-001	SM 4500-CN-E
DOC/DIC (Liquid)	5	OTTAWA	VKASYAN	2024-Aug-20	C-OC-01	EPA 415.2
Ion Balance (Calc.)	5	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	5	OTTAWA	STAILLON	2024-Aug-21	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	5	OTTAWA	AOZKAYMAK	2024-Aug-20	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	5	OTTAWA	APRUDYVUS	2024-Aug-20	D-ICP-01	SM 3120B
ICP/OES (Liquid)	5	OTTAWA	APRUDYVUS	2024-Aug-20	D-ICP-01	SM 3120B
Mercury (Liquid)	5	OTTAWA	TBENNETT	2024-Aug-20	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	5	KINGSTON	JYEARWOOD	2024-Aug-21	NH3-001	SM 4500NH3
Phenols (Liquid)	5	KINGSTON	EHINCH	2024-Aug-20	PHEN-01	MECP E3179
TP & TKN (Liquid)	5	KINGSTON	KDIBBITS	2024-Aug-21	TPTKN-001	MECP E3516.2
TSS (Liquid)	5	KINGSTON	DCASSIDY	2024-Aug-28	TSS-001	SM 2540D
Turbidity (Liquid)	5	OTTAWA	PLUSSIER	2024-Aug-20	A-TURB-01	SM 2130B
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2024-Aug-21	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

Michelle Dubien
Data Specialist

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Parameter	Units	R.L.	Client I.D.	SCG-Upstream	SCG-Downstream	Embay A	Embay B	Embay C
			Sample I.D.	24-025253-1	24-025253-2	24-025253-3	24-025253-4	24-025253-5
			Date Collected	2024-08-15	2024-08-15	2024-08-15	2024-08-15	2024-08-15
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		202	206	195	127	187
Conductivity @25°C	uS/cm	1		462	483	913	367	505
pH @25°C	pH units	-		7.66	7.53	7.52	7.09	7.77
Colour	TCU	2		54	49	22	28	44
Turbidity	NTU	0.1		1.2	1.5	3.3	1.2	6.9
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5		19.8	27.7	146	37.2	42.9
Nitrate (N)	mg/L	0.05		0.10	0.24	2.92	<0.05	0.40
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		10	11	34	7	13
BOD5	mg/L	3		<3	<3	<3	<3	<3
Total Suspended Solids	mg/L	3		<3	<3	3	3	16
Phosphorus (Total)	mg/L	0.01		0.02	0.02	0.03	0.02	0.04
Total Kjeldahl Nitrogen	mg/L	0.1		0.8	0.9	1.8	0.8	1.9
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		<0.05	0.10	0.77	0.12	0.73
Ammonia (N)-unionized	mg/L	0.01		<0.01	<0.01	0.06	0.03	0.11
Dissolved Organic Carbon	mg/L	0.2		13.4	12.3	7.3	11.2	13.4
Cyanide (WAD)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001		<0.001	<0.001	0.001	<0.001	<0.001
COD	mg/L	5		34	33	35	39	51
Aluminum	mg/L	0.01		0.03	0.02	0.11	<0.01	0.03

Michelle Dubien
Data Specialist

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Parameter	Units	R.L.	Client I.D.	SCG-Upstream	SCG-Downstream	Embay A	Embay B	Embay C
			Sample I.D.	24-025253-1	24-025253-2	24-025253-3	24-025253-4	24-025253-5
			Date Collected	2024-08-15	2024-08-15	2024-08-15	2024-08-15	2024-08-15
				-	-	-	-	-
Hardness (as CaCO3)	mg/L	0.02		234	226	214	158	221
Aluminum (Total)	mg/L	0.01		0.03	0.03	0.12	0.01	0.06
Barium (Total)	mg/L	0.001		0.046	0.047	0.043	0.035	0.046
Boron (Total)	mg/L	0.005		0.016	0.018	0.058	0.017	0.027
Calcium (Total)	mg/L	0.02		80.3	76.6	68.2	48.5	73.2
Iron (Total)	mg/L	0.005		0.060	0.077	0.027	0.026	0.050
Magnesium (Total)	mg/L	0.02		8.12	8.45	10.7	8.94	9.19
Manganese (Total)	mg/L	0.001		0.014	0.016	0.030	0.011	0.009
Phosphorus (Total)	mg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Potassium (Total)	mg/L	0.1		2.5	2.6	5.5	0.9	2.7
Sodium (Total)	mg/L	0.2		11.9	16.1	65.2	19.6	25.6
Strontium (Total)	mg/L	0.001		0.234	0.230	0.242	0.190	0.235
Tin (Total)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Titanium (Total)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Zinc (Total)	mg/L	0.005		<0.005	0.057	<0.005	<0.005	<0.005
Antimony (Total)	mg/L	0.0001		0.0004	0.0004	0.0005	0.0003	0.0004
Arsenic (Total)	mg/L	0.0001		0.0003	0.0003	0.0003	0.0003	0.0003
Beryllium (Total)	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium (Total)	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Total)	mg/L	0.0001		0.0001	0.0001	0.0002	<0.0001	0.0001

Michelle Dubien
Data Specialist

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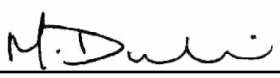
Parameter	Units	R.L.	Client I.D.	SCG-Upstream	SCG-Downstream	Embay A	Embay B	Embay C
			Sample I.D.	24-025253-1	24-025253-2	24-025253-3	24-025253-4	24-025253-5
			Date Collected	2024-08-15	2024-08-15	2024-08-15	2024-08-15	2024-08-15
				-	-	-	-	-
Copper (Total)	mg/L	0.0001		0.0004	0.0005	0.0016	0.0004	0.0007
Lead (Total)	mg/L	0.00002		0.00005	0.00011	0.00009	0.00004	0.00009
Molybdenum (Total)	mg/L	0.0001		0.0002	0.0003	0.0010	0.0001	0.0003
Nickel (Total)	mg/L	0.0002		0.0003	0.0003	0.0006	0.0002	0.0004
Selenium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001		0.0002	0.0002	0.0001	0.0002	0.0001
Thallium (Total)	mg/L	0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005		0.00041	0.00038	0.00027	0.00024	0.00034
Vanadium (Total)	mg/L	0.0001		0.0003	0.0003	0.0004	0.0002	0.0003
Chromium (VI)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	mg/L	0.00002		0.00007	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-		4.82	5.13	8.93	3.73	5.24
Cation Sum	meq/L	-		5.27	5.30	7.32	4.05	5.65
% Difference	%	-		4.42	1.64	9.88	4.14	3.76
Ion Ratio	-	-		0.915	0.968	1.22	0.920	0.928
Sodium Adsorption Ratio	-	-		0.338	0.465	1.94	0.679	0.751
TDS (Ion Sum Calc)	mg/L	1		255	267	460	198	281
TDS(calc.)/EC(actual)	-	-		0.551	0.552	0.504	0.541	0.557
Conductivity Calc	µmho/cm	-		483	502	843	392	536
Conductivity Calc / Conductivity	-	-		1.05	1.04	0.923	1.07	1.06
Langelier Index(25°C)	-	-		0.438	0.295	0.182	-0.545	0.463



Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received and relate only to the items tested. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

		Client I.D.	SCG-Upstream	SCG-Downstream	Embay A	Embay B	Embay C
		Sample I.D.	24-025253-1	24-025253-2	24-025253-3	24-025253-4	24-025253-5
		Date Collected	2024-08-15	2024-08-15	2024-08-15	2024-08-15	2024-08-15
Parameter	**Units**	**R.L.**	-	-	-	-	-
Saturation pH (25°C)	-	-	7.22	7.23	7.34	7.63	7.31
pH (Client Data)	pH units	-	8.68	8.07	8.24	8.75	8.56
Temperature (Client Data)	°C	-	22.1	21.7	21.6	23.9	22.3

Michelle Dubien
Data Specialist

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Parameter	Units	R.L.	Client I.D.: SCG-Upstream Sample I.D.: 24-025253-1 Date Collected: 2024-08-15 -
Acetone	µg/L	30	<30
Benzene	µg/L	0.5	<0.5
Bromodichloromethane	µg/L	2	<2
Bromoform	µg/L	5	<5
Bromomethane	µg/L	0.5	<0.5
Carbon Tetrachloride	µg/L	0.2	<0.2
Chlorobenzene	µg/L	0.5	<0.5
Chloroform	µg/L	1	<1
Chloromethane (Methyl Chloride)	µg/L	2	<2
Dibromochloromethane	µg/L	2	<2
Ethylene Dibromide	µg/L	0.2	<0.2
Dichlorobenzene,1,2-	µg/L	0.5	<0.5
Dichlorobenzene,1,3-	µg/L	0.5	<0.5
Dichlorobenzene,1,4-	µg/L	0.5	<0.5
Dichloroethane,1,1-	µg/L	0.5	<0.5
Dichloroethane,1,2-	µg/L	0.5	<0.5
Dichloroethylene,1,1-	µg/L	0.5	<0.5
Dichloroethylene,1,2-cis-	µg/L	0.5	<0.5
Dichloroethylene,1,2-trans-	µg/L	0.5	<0.5
Dichloropropane,1,2-	µg/L	0.5	<0.5
Dichloropropene,1,3-cis-	µg/L	0.5	<0.5

Michelle Dubien
Data Specialist

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			Client I.D.	SCG-Upstream
			Sample I.D.	24-025253-1
			Date Collected	2024-08-15
Parameter	Units	R.L.	-	
Dichloropropene,1,3-trans-	µg/L	0.5	<0.5	
Ethylbenzene	µg/L	0.5	<0.5	
Dichloromethane (Methylene Chloride)	µg/L	5	<5	
Methyl Ethyl Ketone	µg/L	2	<2	
Methyl Isobutyl Ketone	µg/L	20	<20	
Methyl tert-Butyl Ether (MTBE)	µg/L	2	<2	
Styrene	µg/L	0.5	<0.5	
Tetrachloroethane,1,1,1,2-	µg/L	0.5	<0.5	
Tetrachloroethane,1,1,2,2-	µg/L	0.5	<0.5	
Tetrachloroethylene	µg/L	0.5	<0.5	
Toluene	µg/L	0.5	<0.5	
Trichlorobenzene,1,2,4-	µg/L	0.5	<0.5	
Trichloroethane,1,1,1-	µg/L	0.5	<0.5	
Trichloroethane,1,1,2-	µg/L	0.5	<0.5	
Trichloroethylene	µg/L	0.5	<0.5	
Trichlorofluoromethane (Freon 11)	µg/L	5	<5	
Vinyl Chloride	µg/L	0.2	<0.2	
Xylene, m,p-	µg/L	1	<1	
Xylene, o-	µg/L	0.5	<0.5	

Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received and relate only to the items tested. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

APPENDIX J

Surface Water Photos



SW-1: April 2024



SW-1: August 2024



SW-2: April 2024



SW-2: August 2024



SW-3: April 2024



SW-3: August 2024



SW-4: April 2024



SW-4: August 2024



SW-13: April 2024



SW-13: August 2024



SW-14: April 2024



SW-14: August 2024



SW-15: April 2024



SW-15: August 2024



SW-16: April 2024



SW-16: August 2024



SW-18: April 2024



SW-18: August 2024



WPCP Effluent: April 2024



WPCP Effluent : August 2024



Embayment A: April 2024



Embayment A: August 2024



Embayment B: April 2024



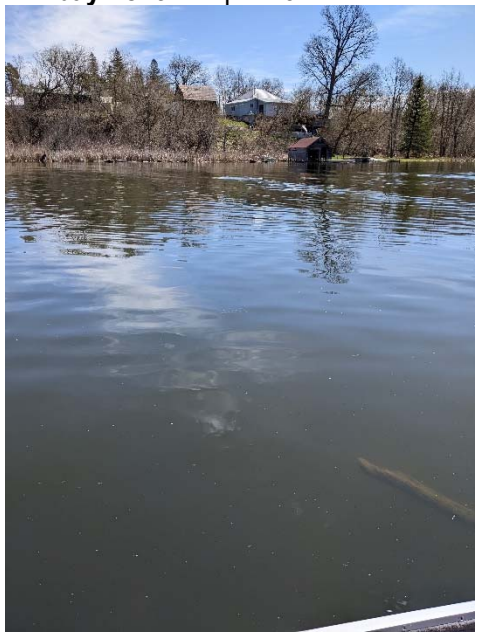
Embayment B: August 2024



Embayment C: April 2024



Embayment C: August 2024



Scugog Upstream: April 2024



Scugog Upstream: August 2024



Scugog Downstream: April 2024



Scugog Downstream: August 2024



Nearshore 1: April 2024



Nearshore 1: August 2024



Nearshore 2: April 2024



Nearshore 2: August 2024



CP 1: June 2024



CP 1: October 2024



CP 2: June 2024



CP 2: October 2024

APPENDIX K

Surface Water Quality Summary Tables

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	CP1 17-Oct-17	CP1 6-Nov-17	CP1 7-Dec-17	CP1 28-Jun-18	CP1 10-Oct-18	CP1 24-Apr-19	CP1 17-Jul-19	CP1 24-Jun-20	CP1 22-Oct-20	CP1 15-Jun-21	CP1 15-Oct-21	CP1 21-Jun-22	CP1 17-Oct-22	CP1 8-Jun-23	CP1 16-Aug-23
pH -Lab	pH units	6.5-8.5	8.18	8.36	8.23	8.04	8.07	8.12	8	9	8.1	7.49	8.06	8.27	8.03	8.36	8.4
Conductivity	uS/cm	-	983	726	768	1420	547	1260	1140	1510	1070	1330	911	1460	1490	1320	931
BOD	mg/L	-	<3	<3	<3	< 3	5	< 3	< 3	< 3	< 3	3	4	< 3	8	< 3	4
COD	mg/L	-	22	<5	29	20	56	33	62	49	48	73	81	79	116	67	89
Total Dissolved Solids	mg/L	-	560	374	407	758	294	647	549	765	605	750	513	732	861	649	488
Total Suspended Solids	mg/L	-	14	4	42	4	< 3	10	8	16	13	12	8	5	78	128	9
Alkalinity	mg/L	-	126	215	245	66	143	163	130	37	162	78	177	102	218	93	162
Hardness	mg/L	-	430	318	327	196	162	260	188	145	261	179	196	158	365	140	127
Ammonia	mg/L	-	0.03	< 0.01	0.03	0.04	0.06	0.05	0.07	0.05	0.28	0.15	0.14	0.06	0.1	0.08	0.33
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	0.02	**0.04**	< 0.01	< 0.01	< 0.01	**0.04**	**0.12**
Calcium	mg/L	-	147	106	112	59.5	50.7	91.3	55.1	41.1	87.6	53.7	64.9	46.6	128	38.3	39.4
Chloride	mg/L	-	80.5	35.3	55.2	363	69.9	268	221	410	175	348	150	324	226	271	173
DOC	mg/L	-	5.5	8	13.1	5.3	20.5	17.4	11.6	4.1	8.8	6.7	15.5	9.5	7	5.3	30.2
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	<0.1
Iron	mg/L	0.3	0.258	0.16	**0.475**	0.059	**0.31**	0.215	0.15	0.121	**0.622**	**0.534**	0.29	0.111	**3.05**	**1.25**	0.244
Magnesium	mg/L	-	15.2	8.26	9.51	11.4	8.61	7.71	8.91	11.8	10.1	10.8	8.2	9.31	13.7	10.7	6.99
Manganese	mg/L	-	0.045	0.017	0.044	0.028	0.034	0.103	0.122	0.072	0.282	0.279	0.496	0.031	1.06	0.092	0.15
Nitrate	mg/L	-	1.95	1.96	1.18	< 0.05	< 0.05	0.12	< 0.05	0.06	0.07	0.1	< 0.05	< 0.05	0.27	< 0.5	<0.05
Nitrite	mg/L	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.12	< 0.05	< 0.05	< 0.5	<0.05
TKN	mg/L	-	0.5	0.6	0.7	0.8	1.3	0.8	1.8	1.3	2	2.5	2.4	2.5	5.3	2.3	2.5
Sodium	mg/L	-	41.9	24.8	37.1	214	39.1	134	142	207	97	167	82.5	201	124	146	85.4
Sulphate	mg/L	-	196	66	43	60	4	28	19	37	93	57	43	33	165	54	24
Phenols	mg/L	0.001	**0.003**	**0.002**	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.001	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	**0.002**
Phosphorus	mg/L	0.03	0.03	0.03	**0.06**	0.01	**0.05**	**0.05**	**0.04**	**0.04**	**0.06**	**0.15**	**0.08**	**0.06**	**0.4**	**0.04**	**0.09**
Potassium	mg/L	-	4.1	3.4	3.2	9.8	35.5	10.5	24.7	35.2	42	39.4	56.9	56.4	68.7	71.5	62.2
Aluminum	mg/L	0.075	**0.19**	**0.19**	**0.4**	0.06	0.03	0.05	0.03	0.03	0.03	0.04	0.01	0.04	0.04	0.02	**0.14**
Antimony	mg/L	-	0.0003	< 0.0001	0.0002	0.0004	< 0.0001	0.0003	0.0003	0.0002	0.0002	0.0003	0.0004	0.0006	0.0009	0.0004	0.0005
Arsenic	mg/L	0.1	0.0006	0.0002	0.0007	0.0007	0.0008	0.0006	0.0013	0.0013	0.0011	0.0015	0.0013	0.001	0.0021	0.0011	0.0014
Barium	mg/L	-	0.085	0.047	0.055	0.039	0.059	0.059	0.054	0.048	0.094	0.061	0.075	0.045	0.147	0.057	0.045
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001
Boron	mg/L	0.2	**0.303**	0.106	0.068	0.179	0.08	0.048	0.117	0.171	0.118	0.099	0.118	0.099	0.107	0.087	0.094
Cadmium	mg/L	0.0002	0.000045	< 0.000014	0.000033	< 0.000015	0.000028	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000036	0.000015	<0.000015
Chromium	mg/L	0.1	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.001	< 0.001	0.002	0.001	< 0.001	<0.001
Cobalt	mg/L	0.0006	< 0.0001	< 0.0001	0.0002	0.0003	0.0001	0.0002	0.0002	0.0002	0.0005	0.0003	0.0003	0.0003	**0.0013**	0.0006	0.0004
Copper	mg/L	0.005	**0.006**	**0.0148**	0.0016	0.0028	**0.0055**	0.0011	0.0019	0.0008	0.0014	0.0008	0.0014	0.0014	0.0025	0.0022	0.0018
Lead	mg/L	0.025	0.00048	0.00031	0.00057	0.00003	0.00024	0.00018	0.00014	0.0004	0.00031	0.00015	0.00009	0.00004	0.00192	0.0008	0.00023
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002
Molybdenum	mg/L	0.04	0.0032	0.0001	0.0009	0.0036	0.0003	0.0008	0.0013	0.0012	0.0023	0.0012	0.0012	0.0012	0.0092	0.0015	0.001
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0025
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001	<0.001
Silver	mg/L	0.0001	< 0.00002	< 0.00002	0.00009	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Strontium	mg/L	-	1.06	0.537	0.525	0.736	0.221	0.615	0.604	0.544	0.677	0.525	0.497	0.391	0.697	0.333	0.237
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0001	< 0.00005	<0.00005
Vanadium	mg/L	-	0.0004	< 0.0001	0.0006	0.0003	0.0001	0.0003	0.0003	0.0006	0.001	0.0007	0.0003	0.0003	0.0043	0.0014	0.0008
Zinc	mg/L	0.03	**0.044**	< 0.005	0.022	0.016	0.008	0.023	0.008	0.013	0.008	0.022	< 0.005	0.007	0.019	0.007	<0.005
Cyanide	mg/L	0.005								< 0.005	< 0.005	< 0.005	< 0.005			< 0.005	<0.005
Turbidity	NTU	-								< 0.5	0.9	8.2	6.4			7.6	9.5
Tannins & Lignins	mg/L	-										0.7	1.1			0.9	1.2

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	CP1 5-Oct-23	CP1 11-Jun-24	CP1 15-Aug-24	CP1 10-Oct-24	CP2 22-Jun-17	CP2 17-Oct-17	CP2 6-Nov-17	CP2 7-Dec-17	CP2 28-Jun-18	CP2 24-Apr-19	CP2 17-Jul-19	CP2 2-Oct-19	CP2 22-Oct-20	CP2 15-Oct-21	CP2 21-Jun-22
pH -Lab	pH units	6.5-8.5	7.92	8.71	8.11	7.99	7.93	8.33	8.37	8.27	8	8.15	8.07	7.89	8.23	8.16	8.21
Conductivity	uS/cm	-	1100	674	657	633	537	837	730	704	698	427	2170		1610	1030	838
BOD	mg/L	-	6	3	<3	<3	<3	<3	<3	<3	8	< 3	< 3		< 3	< 3	< 3
COD	mg/L	-	108	64	72	61	51	14	<5	21	38	25	57		17	34	18
Total Dissolved Solids	mg/L	-	624	361	356	356	272	449	375	366	372	219	1154		910	590	469
Total Suspended Solids	mg/L	-	22	7	5	4	3	13	21	4	12	7	13		40	161	40
Alkalinity	mg/L	-	194	97	163	173	189	321	231	300	144	159	310		340	365	321
Hardness	mg/L	-	194	85.9	141	157	180	361	314	338	243	183	798		490	451	388
Ammonia	mg/L	-	0.19	0.06	0.2	0.26	0.59	0.03	< 0.01	0.02	0.07	0.05	0.11	0.11	0.03	0.05	0.05
Un-ionized Ammonia	mg/L	0.02	<0.01	0.01	<0.01	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01
Calcium	mg/L	-	60.3	23.7	45.8	51.9	59	129	115	112	76.7	66.8	257		174	161	137
Chloride	mg/L	-	216	136	93.3	83.1	39.6	45.3	30.6	25.6	136	23.9	400		306	123	75.4
DOC	mg/L	-	5.7	12.8	23.4	25.9	15.9	5.9	7.8	6.3	15.8	6.6	7.5		4.2	6.5	7.5
Fluoride	mg/L	-	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	**0.494**	0.142	0.296	0.232	**0.891**	0.226	0.134	0.053	**0.696**	0.115	0.179		0.088	**0.947**	0.103
Magnesium	mg/L	-	10.5	6.48	6.33	6.62	7.85	9.28	8.2	7.59	12.4	3.95	19.7		13.3	11.7	9.02
Manganese	mg/L	-	0.408	0.055	0.13	0.116	0.163	0.054	0.023	0.015	1.18	0.024	0.243		0.053	0.301	0.034
Nitrate	mg/L	-	0.06	<0.05	<0.05	<0.05	< 0.05	1.76	2.38	1.91	0.07	0.56	< 0.05		< 0.05	< 0.05	2.96
Nitrite	mg/L	-	<0.05	<0.05	0.06	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	0.07	< 0.05
TKN	mg/L	-	4.4	1.5	2	1.8	1.7	0.5	0.6	0.4	1.6	0.8	1.2		0.9	0.9	0.9
Sodium	mg/L	-	105	76.2	49.8	44.3	20.9	37.2	23.6	20.9	56.7	13.3	149		144	56.5	37.6
Sulphate	mg/L	-	28	14	12	14	3	34	56	19	< 1	10	128		53	16	15
Phenols	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	**0.036**	**0.002**	**0.002**	< 0.001	< 0.001	< 0.002	< 0.002		< 0.002	< 0.002	< 0.001
Phosphorus	mg/L	0.03	**0.21**	**0.05**	**0.08**	**0.05**	**0.12**	0.03	0.03	0.01	**0.08**	**0.05**	**0.05**		0.02	**0.1**	0.03
Potassium	mg/L	-	86.3	46.5	49.8	51.4	27	1.9	2.8	1.3	0.7	2.3	13.2		12.6	2.2	2.2
Aluminum	mg/L	0.075	0.04	0.03	**0.14**	**0.09**	0.06	**0.19**	**0.13**	**0.09**	**0.1**	0.04	**0.11**		0.06	0.05	0.07
Antimony	mg/L	-	0.0006	0.0004	0.0006	0.0006	0.0002	< 0.0001	0.0001	< 0.0001	0.0002	0.0002	0.0004		0.0002	0.0003	0.0004
Arsenic	mg/L	0.1	0.0016	0.0008	0.0012	0.001	0.0023	0.0004	0.0004	0.0004	0.0029	0.0002	0.0008		0.0004	0.0005	0.0004
Barium	mg/L	-	0.075	0.019	0.036	0.058	0.083	0.064	0.047	0.037	0.101	0.026	0.132		0.082	0.08	0.052
Beryillium	mg/L	1.1	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.129	0.082	0.106	0.106	0.058	0.019	0.068	0.011	0.018	0.008	0.092		0.041	0.024	0.02
Cadmium	mg/L	0.0002	<0.000015	<0.000015	<0.000015	<0.000015	< 0.000014	0.000067	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015		< 0.000015	0.000023	< 0.000015
Chromium	mg/L	0.1	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001		0.001	0.001	0.001
Cobalt	mg/L	0.0006	0.0005	0.0002	0.0003	0.0003	0.0003	< 0.0001	< 0.0001	< 0.0001	0.0005	< 0.0001	0.0003		0.0002	0.0006	0.0002
Copper	mg/L	0.005	0.0004	0.0009	0.0009	0.0008	0.0003	**0.0052**	0.0009	0.0005	0.0011	0.0006	0.002		0.0019	0.001	0.0028
Lead	mg/L	0.025	0.00013	0.00005	0.00025	0.00012	0.00017	0.00057	0.00013	0.00004	0.00025	0.00007	0.00012		0.00007	0.00061	0.00007
Mercury	mg/L	-	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002		< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0013	0.0007	0.0008	0.0009	0.0004	0.0002	0.001	0.0002	0.0003	0.0002	0.0019		0.0007	0.0002	0.0002
Nickel	mg/L	0.025	0.0028	0.0016	0.0015	0.0017	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001		< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	<0.0001	<0.0001	**0.0003**	<0.0001	< 0.00002	0.00003	< 0.00002	0.00007	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.37	0.185	0.244	0.262	0.243	0.315	0.444	0.29	0.365	0.166	0.998		0.569	0.445	0.376
Thallium	mg/L	-	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0007	0.0004	0.0006	0.0004	0.0003	0.0005	0.0002	0.0002	0.0006	0.0002	0.0008		0.0004	0.0012	0.0005
Zinc	mg/L	0.03	<0.005	<0.005	<0.005	<0.005	< 0.005	**0.043**	0.01	0.013	0.012	0.015	0.01		< 0.005	0.009	0.014
Cyanide	mg/L	0.005	<0.005	<0.005	<0.005	<0.005							< 0.005	< 0.005			
Turbidity	NTU	-	20.1	3.4	5.9	6							0.9	91.6			
Tannins & Lignins	mg/L	-	1.2	0.7	0.9									0.5			

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	CP2 8-Jun-23	CP2 16-Aug-23	CP2 5-Oct-23	CP2 11-Jun-24	CP2 15-Aug-24	CP2 10-Oct-24	Emb A 28-Apr-15	Emb A 17-Jun-15	Emb A 18-Aug-15	Emb A 17-Nov-15	Emb A 28-Apr-16	Emb A 14-Jun-16	Emb A 9-Aug-16	Emb A 12-Oct-16	Emb A 24-Apr-17
pH -Lab	pH units	6.5-8.5	Dry	8.18	8.22	8.28	Dry	8.22	8.24	8.51	8.22	8.26	8.4	9.09	8.56	8.18	8.25
Conductivity	uS/cm	-		916	1140	845		966	439	1120	715	475	468	668	465	1170	788
BOD	mg/L	-		<3	<3	<3		<3	< 2	< 2	< 3	< 2	< 2	3	< 3	< 3	<3
COD	mg/L	-		26	29	20		25	8	23	25	15	22	40	27	24	21
Total Dissolved Solids	mg/L	-		507	686	486		574	238	609	357	255	247	354	235	637	459
Total Suspended Solids	mg/L	-		<3	25	10		28	4	26	< 3	11	3	17	4	3	4
Alkalinity	mg/L	-		367	383	327		403	173	197	125	169	172	90	92	185	165
Hardness	mg/L	-		376	487	394		469	205	293	156	216	202	150	121	251	243
Ammonia	mg/L	-		1.27	0.19	0.78		0.09	0.02	0.06	0.04	0.04	0.06	0.03	0.02	0.34	0.31
Un-ionized Ammonia	mg/L	0.02		**0.07**	<0.01	**0.08**		<0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	0.01	0.02
Calcium	mg/L	-		135	173	142		166	69.5	99.8	44.2	70.8	66.3	41.2	30.7	73	92.1
Chloride	mg/L	-		76	159	76.3		79.2	26.4	198	119	31	33.5	125	71.8	178	60
DOC	mg/L	-		9.4	6.3	5		9.4	6.5	1.9	3.2	9.2	8.4	7.2	7.4	4.5	6.9
Fluoride	mg/L	-		<0.1	<0.1	<0.1		<0.1	0.2	< 0.1	0.2	0.1	< 0.1	0.1	0.1	0.2	< 0.1
Iron	mg/L	0.3		0.157	0.132	**0.424**		0.218	0.068	< 0.005	0.017	0.057	0.052	0.094	0.016	0.042	0.043
Magnesium	mg/L	-		9.38	13.4	9.8		13.4	7.58	10.5	11	9.38	8.86	11.5	10.7	16.6	10.6
Manganese	mg/L	-		0.16	0.186	0.261		0.125	0.017	0.014	0.007	0.01	0.028	0.019	0.011	0.018	0.033
Nitrate	mg/L	-		0.25	<0.05	0.55		<0.05	0.6	5.8	0.9	1.3	0.7	0.3	< 0.1	5.2	1.6
Nitrite	mg/L	-		<0.05	<0.05	<0.05		<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3	0.1
TKN	mg/L	-		1.8	0.7	1.1		0.9	0.6	0.9	0.9	0.7	0.7	0.9	1.1	1.5	1.2
Sodium	mg/L	-		43.1	72.3	45.9		52	14.5	109	65.2	17.4	19	75.1	42.7	131	98.5
Sulphate	mg/L	-		19	33	12		13	11	41	35	17	11	40	22	100	25
Phenols	mg/L	0.001		**0.002**	<0.001	<0.001		<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.003**	< 0.001	**0.003**
Phosphorus	mg/L	0.03		0.02	0.02	**0.04**		0.03	**0.04**	0.02	0.02	0.03	**0.05**	0.03	0.03	0.03	0.03
Potassium	mg/L	-		2.7	4.7	1		8.6	2.1	5.9	3.1	2.4	1.9	5	1.9	14.7	5.1
Aluminum	mg/L	0.075		**0.1**	**0.08**	**0.24**		0.07	0.06	**0.19**	**0.08**	0.06	0.03	**0.13**	0.02	**0.27**	**0.29**
Antimony	mg/L	-		0.0005	0.0004	0.0003		0.0003	< 0.0001	0.0003	0.0004	< 0.0001	< 0.0001	0.0001	0.0002	0.0003	0.0001
Arsenic	mg/L	0.1		0.0004	0.0003	0.0004		0.0003	0.0002	0.0004	0.0006	0.0003	0.0003	0.0003	0.0004	0.0005	0.0008
Barium	mg/L	-		0.058	0.077	0.047		0.059	0.031	0.033	0.038	0.039	0.023	0.011	0.029	0.038	0.042
Beryillium	mg/L	1.1		<0.0001	<0.0001	<0.0001		<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2		0.025	0.023	0.014		0.028	0.008	0.067	0.041	0.011	< 0.005	0.058	0.037	0.151	0.054
Cadmium	mg/L	0.0002		<0.000015	<0.000015	<0.000015		<0.000015	< 0.00002	< 0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014
Chromium	mg/L	0.1		<0.001	<0.001	<0.001		<0.001	< 0.0002	0.0004	0.0003	< 0.0002	0.0009	0.0005	0.0004	0.0004	< 0.0015
Cobalt	mg/L	0.0006		0.0005	0.0005	0.0006		0.0004	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0001	< 0.0001
Copper	mg/L	0.005		0.0012	0.0007	0.0009		0.0008	0.0005	0.0028	0.0037	0.0006	0.0007	0.0006	0.0005	0.0017	0.0015
Lead	mg/L	0.025		0.00008	0.00014	0.00019		0.00004	0.00009	0.00035	0.00085	0.00014	0.00014	0.00044	0.00004	0.00052	0.00029
Mercury	mg/L	-		<0.00002	<0.00002	<0.00002		<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04		0.0002	0.0002	0.0001		0.0002	0.0003	0.0007	0.0007	0.0003	0.0003	0.0003	0.0003	0.001	0.0007
Nickel	mg/L	0.025		0.0007	0.001	0.0007		0.0008	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-		<0.001	<0.001	<0.001		<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001		<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	**0.00011**	< 0.00002	**0.00011**	**0.00031**
Strontium	mg/L	-		0.38	0.457	0.385		0.462	0.195	0.331	0.207	0.227	0.208	0.201	0.151	0.262	0.28
Thallium	mg/L	-		<0.00005	<0.00005	<0.00005		<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-		0.0006	0.0003	0.0006		0.0003	0.0003	0.0004	0.0007	0.0005	0.0004	0.0005	0.0005	0.0003	0.0004
Zinc	mg/L	0.03		0.005	0.005	<0.005		<0.005	< 0.005	0.011	0.007	< 0.005	< 0.005	0.009	< 0.005	**0.031**	**0.451**
Cyanide	mg/L	0.005		<0.005	<0.005	<0.005		<0.005									
Turbidity	NTU	-		4.4	29	3.2		2.8									
Tannins & Lignins	mg/L	-		<0.5	<0.5	<0.5											

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Emb A 22-Jun-17	Emb A 24-Aug-17	Emb A 17-Oct-17	Emb A 9-May-18	Emb A 26-Jun-18	Emb A 28-Aug-18	Emb A 10-Oct-18	Emb A 25-Apr-19	Emb A 18-Jul-19	Emb A 12-Aug-19	Emb A 8-Oct-19	Emb A 27-Apr-20	Emb A 24-Jun-20	Emb A 10-Aug-20	Emb A 22-Oct-20
pH -Lab	pH units	6.5-8.5	8.2	8.1	8.04	8.15	8.07	8.1	7.95	8.04	7.96	8.19	7.98	8	7.99	8.05	8.2
Conductivity	uS/cm	-	883	886	728	557	1370	423	1200	895	1020	1110	867	1270	1060	1170	758
BOD	mg/L	-	<3	<3	<3	< 3	< 3	2	4	< 3	< 3	< 3	< 3	4	< 3	< 3	< 3
COD	mg/L	-	30	36	29	32	34	46	32	28	31	30	21	32	31	23	17
Total Dissolved Solids	mg/L	-	429	444	382	314	732	227	658	457	500	608	475	677	564	626	383
Total Suspended Solids	mg/L	-	3	11	6	4	9	9	4	14	7	5	3	28	4	7	7
Alkalinity	mg/L	-	204	178	164	169	257	110	195	206	162	168	162	230	153	158	180
Hardness	mg/L	-	235	236	220	215	270	143	293	266	226	221	195	327	211	239	254
Ammonia	mg/L	-	1.47	0.81	3.44	0.26	15.9	0.14	0.89	0.16	1.12	0.59	0.54	0.22	0.57	0.28	0.27
Un-ionized Ammonia	mg/L	0.02	**0.08**	**0.08**	**1.05**	**0.03**	**0.53**	< 0.01	**0.04**	< 0.01	**0.11**	**0.09**	0.01	< 0.01	**0.03**	< 0.01	< 0.01
Calcium	mg/L	-	78.7	76.7	67.8	67.8	75	47.3	92.7	88.7	64.6	68.2	57.2	98.1	70.2	72.1	70.4
Chloride	mg/L	-	108	116	92.7	71.6	239	54.5	188	134	161	227	145	252	204	226	107
DOC	mg/L	-	7.6	7.8	6.8	9	6.3	9.9	5.6	6.8	7.3	7	7	3.5	5	4.2	5.9
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	0.065	0.118	0.077	0.08	0.057	0.049	0.071	0.068	0.055	0.04	0.006	0.08	0.124	0.083	0.055
Magnesium	mg/L	-	9.46	12.7	12.3	9.15	12.5	10.6	14.9	8.06	10.4	12.3	12.7	11.4	13.3	14.2	12
Manganese	mg/L	-	0.043	0.057	0.055	0.041	0.058	0.045	0.056	0.026	0.107	0.048	< 0.001	0.028	0.075	0.062	0.025
Nitrate	mg/L	-	0.53	0.22	0.18	0.4	0.25	< 0.05	3.54	4.9	0.2	0.24	1.19	7	0.12	0.25	0.86
Nitrite	mg/L	-	0.09	0.11	< 0.05	< 0.05	0.1	< 0.05	0.22	< 0.05	< 0.05	< 0.05	1.07	< 0.05	< 0.05	< 0.05	< 0.05
TKN	mg/L	-	2.3	1.9	4.1	1	19.5	1.1	2	1.2	2.3	1.7	1.3	1.5	2	1.3	1.1
Sodium	mg/L	-	72.9	85.3	67.3	32.5	151	33.1	134	69.4	113	128	97.5	127	118	129	50.6
Sulphate	mg/L	-	31	39	32	14	68	13	92	29	43	57	44	42	56	77	29
Phenols	mg/L	0.001	**0.004**	**0.006**	**0.003**	< 0.001	< 0.001	< 0.002	**0.003**	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	**0.008**	< 0.002	< 0.002
Phosphorus	mg/L	0.03	0.03	**0.08**	**0.06**	**0.04**	**0.05**	**0.04**	**0.04**	**0.04**	**0.04**	0.02	0.03	**0.07**	**0.06**	0.03	0.02
Potassium	mg/L	-	3.9	6.2	7.4	2.6	11.9	2.3	11.3	4.2	9.4	12.5	11.8	9	9.8	13.6	5.2
Aluminum	mg/L	0.075	**0.16**	**0.54**	**0.17**	0.07	**0.25**	0.05	**0.18**	**0.1**	0.07	**0.14**	0.06	**0.28**	**0.08**	**0.16**	0.05
Antimony	mg/L	-	0.0003	0.0004	0.0001	< 0.0001	0.0002	0.0001	0.0003	0.0004	0.0005	0.0005	0.0002	0.0002	0.0004	0.0004	0.0003
Arsenic	mg/L	0.1	0.0007	0.0006	0.0006	< 0.0001	0.0004	0.0004	0.0003	0.0002	0.0003	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003
Barium	mg/L	-	0.034	0.077	0.057	0.046	0.06	0.047	0.062	0.045	0.066	0.055	0.032	0.044	0.058	0.069	0.044
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.052	0.09	0.073	0.016	0.127	0.034	0.127	0.029	0.102	0.128	0.098	0.078	0.184	0.199	0.049
Cadmium	mg/L	0.0002	0.000016	0.000085	0.000057	< 0.000015	< 0.000015	< 0.000015	0.000034	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000021	< 0.000015	0.000024	< 0.000015
Chromium	mg/L	0.1	< 0.001	< 0.001	0.001	< 0.001	< 0.001	0.001	0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0006	0.0001	0.0003	< 0.0001	< 0.0001	0.0003	0.0001	0.0002	0.0001	0.0001	0.0002	< 0.0001	0.0003	0.0001	0.0001	< 0.0001
Copper	mg/L	0.005	0.0012	**0.0053**	**0.0072**	< 0.0001	0.0015	0.0002	**0.0054**	0.0012	0.0009	0.0007	0.0011	0.0049	0.0005	0.0007	0.0006
Lead	mg/L	0.025	0.00021	0.00092	0.00062	< 0.00002	0.00014	0.00011	0.00067	0.00016	0.00037	0.00066	0.00036	0.00081	0.00039	0.00076	0.00024
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0017	0.0042	0.0011	< 0.0001	0.0015	0.0006	0.0013	0.0006	0.0019	0.0033	0.0008	0.0015	0.0017	0.0128	0.0007
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.265	0.282	0.213	0.21	0.273	0.205	0.309	0.24	0.237	0.25	0.243	0.282	0.263	0.281	0.226
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0005	0.0002	0.0003	< 0.0001	0.0003	0.0004	0.0007	0.0005	0.0004	0.0005	0.0002	0.0005	0.0004	0.0003	0.0003
Zinc	mg/L	0.03	< 0.005	**0.049**	**0.041**	0.024	0.013	0.026	**0.039**	0.014	0.014	0.022	0.02	0.025	0.024	**0.034**	0.012
Cyanide	mg/L	0.005									< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Turbidity	NTU	-															2.9
Tannins & Lignins	mg/L	-													2.5	3.8	

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Emb A 26-Apr-21	Emb A 15-Jun-21	Emb A 10-Aug-21	Emb A 12-Oct-21	Emb A 26-Apr-22	Emb A 21-Jun-22	Emb A 24-Aug-22	Emb A 17-Oct-22	Emb A 24-Apr-23	Emb A 8-Jun-23	Emb A 16-Aug-23	Emb A 5-Oct-23	Emb A 25-Apr-24	Emb A 11-Jun-24	Emb A 15-Aug-24
pH -Lab	pH units	6.5-8.5	8.23	8.02	8.13	7.99	7.99	8.11	7.99	7.92	8.18	8.16	8	8.13	8.15	8.03	7.52
Conductivity	uS/cm	-	996	1520	1360	829	1480	1420	1050	905	524	1440	1360	1300	570	1350	913
BOD	mg/L	-	< 3	5	4	< 3	5	< 3	< 3	4	< 3	< 3	<3	<3	<3	<3	<3
COD	mg/L	-	27	68	42	37	26	35	29	24	22	< 5	28	31	31	29	35
Total Dissolved Solids	mg/L	-	526	821	738	470	761	725	545	447	268	681	750	747	302	772	460
Total Suspended Solids	mg/L	-	3	4	12	10	4	3	5	3	5	< 3	4	20		4	3
Alkalinity	mg/L	-	221	302	267	193	253	277	191	177	194	149	212	210	193	179	195
Hardness	mg/L	-	282	345	294	211	322	337	195	233	223	242	261	280	252	309	214
Ammonia	mg/L	-	1.84	22.1	11	3.24	9.87	7.02	9.69	0.9	0.11	0.12	1.06	0.45	0.18	0.82	0.77
Un-ionized Ammonia	mg/L	0.02	**0.12**	**1.24**	**0.11**	0.02	**0.06**	**0.27**	**0.12**	**0.04**	< 0.01	0.02	**0.05**	<0.01	<0.01	**0.08**	**0.06**
Calcium	mg/L	-	89.5	87.3	80.2	65.2	107	103	59.3	66	65.1	60.3	84.2	86.3	71.2	99.6	68.2
Chloride	mg/L	-	163	260	250	139	255	245	188	143	42.9	289	275	273	52.9	275	146
DOC	mg/L	-	4.8	6.8	4.8	4.3	< 0.2	4.4	3.3	2.7	8.9	1.1	3.1	1.3	4.3	3.7	7.3
Fluoride	mg/L	-	< 0.1	< 1	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	<0.7	<0.7	<0.1	<0.1	<0.1
Iron	mg/L	0.3	0.073	0.161	0.146	0.013	0.047	0.057	0.04	0.154	0.061	0.017	0.017	0.05	0.006	0.02	0.027
Magnesium	mg/L	-	11.3	15.8	14.7	11.8	13.2	12.5	11.5	12.8	7.71	13	12.3	15.6	8.73	14.7	10.7
Manganese	mg/L	-	0.024	0.114	0.082	< 0.001	0.032	0.056	0.063	0.02	0.028	0.006	0.022	0.017	0.005	0.007	0.03
Nitrate	mg/L	-	0.83	1.85	< 0.05	< 0.05	3.53	0.29	0.1	6.61	1.25	6.42	6.48	7.64	1.74	7.87	2.92
Nitrite	mg/L	-	0.13	< 0.5	< 0.05	0.15	< 0.5	< 0.05	< 0.05	0.41	< 0.05	0.68	<0.40	<0.40	<0.05	<0.05	<0.05
TKN	mg/L	-	3	25.5	13.4	4.5	10.3	10.5	16.9	1.7	0.8	1.3	2	1	0.8	1.6	1.8
Sodium	mg/L	-	85.4	157	140	81.4	169	132	105	77.6	19	159	146	137	27.5	165	65.2
Sulphate	mg/L	-	34	75	63	43	42	49	33	31	15	58	60	57	16	59	34
Phenols	mg/L	0.001	< 0.002	**0.002**	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.002**	<0.001	<0.001	<0.001	**0.004**	0.001
Phosphorus	mg/L	0.03	**0.07**	**0.11**	**0.08**	**0.07**	**0.06**	**0.05**	**0.04**	0.03	0.03	**0.04**	**0.04**	**0.04**	0.03	0.03	0.03
Potassium	mg/L	-	7.1	15.8	14.7	9.6	10.1	7.7	8.6	8	1.9	12.3	14.6	18	2.4	14.2	5.5
Aluminum	mg/L	0.075	**0.18**	**0.23**	**0.15**	0.03	**0.1**	**0.17**	0.06	**0.08**	0.02	**0.43**	**0.22**	**0.51**	0.04	**0.45**	**0.12**
Antimony	mg/L	-	0.0004	0.0005	0.0006	0.0003	0.0004	0.0005	0.0004	0.0004	0.0003	0.0005	0.0003	0.0008	0.0002	0.0005	0.0005
Arsenic	mg/L	0.1	0.0003	0.0004	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0003
Barium	mg/L	-	0.043	0.109	0.079	0.044	0.056	0.047	0.045	0.043	0.031	0.003	0.065	0.054	0.031	0.039	0.043
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	0.2	0.055	0.165	0.112	0.072	0.107	0.086	0.106	0.076	0.01	0.164	0.192	0.196	0.017	0.156	0.058
Cadmium	mg/L	0.0002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.00003	<0.000015	<0.000015	<0.000015	0.000026	<0.000015
Chromium	mg/L	0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	0.002	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0006	0.0001	0.0001	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0003	0.0004	0.0003	0.0003	0.0002
Copper	mg/L	0.005	0.0007	0.0011	0.0008	0.0004	0.0017	0.0005	0.0006	0.0015	0.0005	0.0044	0.0029	**0.0058**	0.0019	0.005	0.0016
Lead	mg/L	0.025	0.00022	0.00015	0.00014	0.0002	0.00026	0.00015	0.00016	0.00023	0.00011	0.0006	0.00025	0.00043	0.00024	0.00047	0.00009
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.04	0.003	0.0011	0.0003	0.0003	0.0032	0.0013	0.0011	0.0014	0.0003	0.003	0.0044	0.0049	0.0009	0.0027	0.001
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0016	0.0021	0.0006	0.0017	0.0006
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0001
Strontium	mg/L	-	0.275	0.318	0.314	0.219	0.373	0.326	0.237	0.245	0.193	0.263	0.302	0.304	0.211	0.323	0.242
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-	0.0004	0.0002	0.0003	0.0004	0.0003	0.0003	0.0002	0.0004	0.0005	0.0004	0.0005	0.0007	0.0004	0.0003	0.0004
Zinc	mg/L	0.03	0.015	0.018	0.013	< 0.005	0.013	0.009	< 0.005	0.01	< 0.005	0.028	0.017	0.012	<0.005	0.019	<0.005
Cyanide	mg/L	0.005	< 0.005								< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Turbidity	NTU	-	3.9								2.4	1.5	2.1	8.4	2.1	1.8	3.3
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Emb A 10-Oct-24	Emb B 28-Apr-15	Emb B 17-Jun-15	Emb B 18-Aug-15	Emb B 17-Nov-15	Emb B 28-Apr-16	Emb B 14-Jun-16	Emb B 9-Aug-16	Emb B 12-Oct-16	Emb B 24-Apr-17	Emb B 22-Jun-17	Emb B 24-Aug-17	Emb B 17-Oct-17	Emb B 9-May-18	Emb B 26-Jun-18
pH -Lab	pH units	6.5-8.5	8.11	7.99	8.11	8.25	8.24	8.37	8.19	8.14	8.19	8.28	8.08	8.13	7.92	8.08	8.09
Conductivity	uS/cm	-	1270	513	488	427	472	472	445	368	475	475	355	360	437	434	418
BOD	mg/L	-	<3	7	< 2	3	< 2	< 2	2	< 3	< 3	<3	<3	<3	<3	< 3	< 3
COD	mg/L	-	24	97	35	31	14	21	22	26	27	24	40	27	30	33	23
Total Dissolved Solids	mg/L	-	729	277	267	216	261	249	234	189	239	234	169	185	217	240	210
Total Suspended Solids	mg/L	-	<3	98	6	3	10	3	3	5	< 3	5	3	4	5	< 3	4
Alkalinity	mg/L	-	190	190	199	141	170	174	113	105	142	154	118	119	141	165	106
Hardness	mg/L	-	308	222	245	167	227	207	150	138	181	188	111	147	165	202	133
Ammonia	mg/L	-	0.26	0.14	0.05	0.02	0.03	0.1	0.05	0.02	0.09	0.05	< 0.01	0.02	0.05	0.1	0.08
Un-ionized Ammonia	mg/L	0.02	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	0.01	< 0.01
Calcium	mg/L	-	97.8	76.5	85	50.7	74.4	67.9	43.7	37.1	50.3	57.1	38.5	46.7	51.5	64.7	34.4
Chloride	mg/L	-	242	40.2	19.7	40.9	31.1	32.1	61.3	42.9	52.2	35.1	28	29.9	39.7	33	58.8
DOC	mg/L	-	6.2	6.2	10.9	8.1	9.2	8.2	8.3	8.4	9.3	9.1	10.6	11.1	9.8	8.6	9.3
Fluoride	mg/L	-	<0.1	0.2	0.1	0.1	0.1	< 0.1	0.1	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	0.027	0.229	0.09	0.054	0.07	0.056	0.182	0.037	0.012	0.076	0.038	0.063	0.032	0.088	0.02
Magnesium	mg/L	-	15.4	7.59	7.83	9.85	9.87	9.03	9.98	11.1	13.4	8.13	5.64	9.59	8.82	8.43	8.19
Manganese	mg/L	-	0.012	0.117	0.019	0.022	0.011	0.03	0.025	0.014	0.019	0.02	0.016	0.03	0.011	0.063	0.016
Nitrate	mg/L	-	6.46	0.4	2	< 0.1	1.3	0.7	0.1	< 0.1	< 0.1	0.9	< 0.05	< 0.05	< 0.05	0.29	0.11
Nitrite	mg/L	-	<0.05	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
TKN	mg/L	-	1.4	2.5	0.9	0.9	0.7	0.7	0.8	0.8	0.8	0.7	0.8	0.7	0.6	0.8	0.8
Sodium	mg/L	-	152	20.5	13.3	21.6	18.3	18.5	33.7	23	29.7	18.2	21.4	18.5	22.5	19.8	32.8
Sulphate	mg/L	-	60	13	10	8	17	12	16	11	14	17	4	8	8	9	11
Phenols	mg/L	0.001	<0.001	**0.005**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	**0.003**	< 0.001	**0.013**	**0.006**	**0.004**	< 0.001	< 0.001
Phosphorus	mg/L	0.03	**0.12**	**0.27**	0.03	0.03	0.03	**0.05**	**0.04**	0.03	0.02	0.01	0.02	**0.04**	0.02	**0.04**	0.03
Potassium	mg/L	-	18.7	3.5	1.8	0.4	2.6	1.9	1.4	0.3	1.9	1.6	0.5	0.9	2.1	2.1	0.7
Aluminum	mg/L	0.075	**0.25**	**0.12**	0.06	0.04	0.07	0.03	0.04	0.02	0.02	0.06	0.02	0.06	0.03	0.06	0.03
Antimony	mg/L	-	0.0006	0.0005	< 0.0001	0.0004	0.0001	< 0.0001	0.0001	0.0002	0.0001	< 0.0001	0.0001	0.0004	< 0.0001	< 0.0001	0.0002
Arsenic	mg/L	0.1	0.0002	0.0007	0.0004	0.0006	0.0003	0.0003	0.0003	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004
Barium	mg/L	-	0.033	0.042	0.04	0.032	0.042	0.024	0.023	0.031	0.037	0.028	0.017	0.05	0.031	0.044	0.024
Beryillium	mg/L	1.1	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.139	0.055	0.012	< 0.006	0.011	< 0.005	0.018	0.016	0.02	0.006	0.016	0.018	0.019	0.01	0.013
Cadmium	mg/L	0.0002	<0.000015	**0.00037**	< 0.00002	0.00004	0.00008	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	0.000077	0.000056	< 0.000015	< 0.000015
Chromium	mg/L	0.1	<0.001	0.0014	0.0002	0.0004	0.0004	< 0.0002	0.0005	0.0005	0.0003	< 0.0015	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0006	0.0003	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0002
Copper	mg/L	0.005	**0.0061**	**0.0091**	0.0002	0.0041	0.0032	0.0006	0.0005	0.0004	0.0003	0.0002	0.0004	**0.0085**	**0.0069**	0.0005	0.0005
Lead	mg/L	0.025	0.00015	0.00157	0.00017	0.00069	0.00057	0.00014	0.00048	0.00007	0.00003	0.00016	0.00009	0.00061	0.00047	0.0002	0.00004
Mercury	mg/L	-	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0031	0.0011	0.0003	0.0002	0.0003	0.0003	0.0003	0.0001	0.0001	0.0003	0.0002	0.0004	0.0002	0.0003	0.0003
Nickel	mg/L	0.025	0.0011	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	0.00002	0.00003	0.00007	< 0.00002	0.00007	**0.00022**	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001
Strontium	mg/L	-	0.312	0.214	0.255	0.206	0.24	0.206	0.191	0.162	0.21	0.163	0.144	0.2	0.142	0.193	0.152
Thallium	mg/L	-	<0.00005	0.00036	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0003	0.0011	0.0007	0.0006	0.0005	0.0004	0.0006	0.0007	0.0003	0.0005	0.0004	0.0002	0.0003	0.0005	0.0004
Zinc	mg/L	0.03	0.012	0.029	< 0.005	0.017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.017	< 0.005	**0.043**	0.006	0.018	0.006
Cyanide	mg/L	0.005	<0.005														< 0.005
Turbidity	NTU	-	0.9														
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Emb B 28-Aug-18	Emb B 10-Oct-18	Emb B 25-Apr-19	Emb B 18-Jul-19	Emb B 12-Aug-19	Emb B 8-Oct-19	Emb B 27-Apr-20	Emb B 24-Jun-20	Emb B 10-Aug-20	Emb B 22-Oct-20	Emb B 26-Apr-21	Emb B 15-Jun-21	Emb B 10-Aug-21	Emb B 12-Oct-21	Emb B 26-Apr-22
pH -Lab	pH units	6.5-8.5	8.02	8.02	8.2	8.17	7.91	7.97	8.02	7.92	8.01	8.16	8.2	8.37	8.14	8.01	7.73
Conductivity	uS/cm	-	405	526	455	265	427	460	520	403	403	508	518	371	333	461	527
BOD	mg/L	-	2	3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
COD	mg/L	-	46	38	27	30	30	19	26	28	29	16	25	29	41	34	28
Total Dissolved Solids	mg/L	-	217	274	231	126	225	240	261	216	212	261	283	204	174	250	276
Total Suspended Solids	mg/L	-	6	10	5	3	4	< 3	11	4	3	7	5	4	5	11	5
Alkalinity	mg/L	-	125	165	166	64	108	135	185	113	97	165	185	102	98	160	189
Hardness	mg/L	-	157	216	207	88	159	173	255	152	152	223	227	145	127	173	214
Ammonia	mg/L	-	0.04	0.05	0.07	0.05	0.11	0.14	0.05	0.08	0.02	0.04	0.04	0.09	0.03	0.07	3.39
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	0.02	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	**0.07**
Calcium	mg/L	-	54.5	67.9	69.6	21.9	47.9	51.9	70.3	48.4	44.6	66	80.2	35.4	31.9	55	71.4
Chloride	mg/L	-	44.1	58.4	27.4	33.6	60.3	58.7	36.3	48.7	58.8	49.1	41.4	54.5	41	52.7	40.5
DOC	mg/L	-	11	11.8	1.7	9.3	10	8	8.6	8.8	8.6	9.9	9	10.9	10.5	7.9	8.6
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	0.059	0.051	0.078	0.023	0.04	0.059	0.073	0.21	0.081	0.051	0.082	0.098	0.058	0.042	0.073
Magnesium	mg/L	-	10.5	11.2	6.23	6.64	9.56	10.5	7.14	10.2	9.76	12	9.16	10	8.73	8.71	8.72
Manganese	mg/L	-	0.047	0.021	0.021	0.017	0.007	0.02	0.021	0.087	0.029	0.011	0.024	0.026	0.095	0.038	0.037
Nitrate	mg/L	-	< 0.05	< 0.05	1.92	< 0.05	0.07	< 0.05	2.16	0.07	0.1	< 0.05	1.13	0.1	< 0.05	< 0.05	1.08
Nitrite	mg/L	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
TKN	mg/L	-	0.9	0.8	0.2	0.7	0.8	0.7	0.6	1.1	0.8	0.7	0.8	1.1	0.9	0.9	3.5
Sodium	mg/L	-	26.2	33.9	13.8	20.2	32	28	14.9	26.8	27.4	16.7	22.1	28.8	21.8	23.7	21.2
Sulphate	mg/L	-	6	6	12	6	9	8	20	12	12	15	18	13	10	11	14
Phenols	mg/L	0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001
Phosphorus	mg/L	0.03	**0.05**	0.03	0.01	0.03	0.02	0.03	0.02	**0.06**	0.03	0.02	**0.09**	**0.06**	0.03	**0.04**	0.03
Potassium	mg/L	-	0.8	1.9	2.1	< 0.1	0.9	2	1.3	1.2	0.7	2.2	1.9	1.3	0.9	2.5	2
Aluminum	mg/L	0.075	0.04	0.05	0.05	0.01	0.03	0.04	0.06	0.02	0.03	0.06	0.05	0.04	0.01	0.03	0.05
Antimony	mg/L	-	0.0001	< 0.0001	0.0001	0.0003	0.0002	0.0002	< 0.0001	0.0002	0.0004	0.0003	0.0003	0.0006	0.0004	0.0002	0.0003
Arsenic	mg/L	0.1	0.0003	0.0003	0.0002	0.0003	0.0004	0.0003	0.0002	0.0005	0.0004	0.0003	0.0003	0.0006	0.0004	0.0003	0.0003
Barium	mg/L	-	0.045	0.048	0.032	0.018	0.034	0.035	0.027	0.043	0.044	0.047	0.04	0.023	0.025	0.036	0.037
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.029	0.023	0.007	0.014	0.022	0.016	0.008	0.093	0.09	0.011	0.012	0.019	< 0.005	0.015	0.011
Cadmium	mg/L	0.0002	0.000089	0.000042	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.1	0.001	0.002	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0006	0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0002	0.0001
Copper	mg/L	0.005	**0.0065**	**0.0072**	0.0012	0.0004	0.0008	0.0007	0.0012	0.0007	0.0003	0.0003	0.0006	0.0005	0.0004	0.0002	0.0005
Lead	mg/L	0.025	0.00042	0.00033	0.00012	0.00009	0.00018	0.00012	0.00015	0.00018	0.00004	0.00006	0.00015	0.00014	0.0001	0.00009	0.00012
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0002	0.0002	0.0004	0.0002	0.0003	0.0001	0.0005	0.0004	0.0003	0.0003	0.0004	0.0004	0.0002	0.0002	0.0003
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.214	0.234	0.171	0.113	0.193	0.182	0.178	0.195	0.183	0.208	0.224	0.154	0.148	0.176	0.211
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0003	0.0002	0.0005	0.0005	0.0005	0.0001	0.0005	0.0005	0.0004	0.0003	0.0005	0.0005	0.0004	0.0003	0.0004
Zinc	mg/L	0.03	0.018	0.016	0.009	0.006	0.006	0.005	0.005	0.011	**0.066**	0.005	0.005	0.017	0.011	0.022	< 0.005
Cyanide	mg/L	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005								
Turbidity	NTU	-					1.6	4.5	2.5								
Tannins & Lignins	mg/L	-				2.7											

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Emb B 21-Jun-22	Emb B 24-Aug-22	Emb B 17-Oct-22	Emb B 24-Apr-23	Emb B 8-Jun-23	Emb B 16-Aug-23	Emb B 5-Oct-23	Emb B 25-Apr-24	Emb B 11-Jun-24	Emb B 15-Aug-24	Emb B 10-Oct-24	Emb C 28-Apr-15	Emb C 17-Jun-15	Emb C 18-Aug-15	Emb C 17-Nov-15
pH -Lab	pH units	6.5-8.5	8.06	8.03	7.91	8.13	7.96	7.26	8.07	8.21	7.37	7.09	8.03	8.23	8.2	8.39	8.24
Conductivity	uS/cm	-	435	421	500	521	341	387	503	513	433	367	456	641	506	405	486
BOD	mg/L	-	< 3	< 3	< 3	< 3	< 3	<3	<3	<3	<3	<3	<3	< 2	< 2	< 3	< 2
COD	mg/L	-	34	30	25	22	32	31	37	30	29	39	27	10	33	35	13
Total Dissolved Solids	mg/L	-	239	216	251	274	170	218	273	287	233	198	253	350	274	213	270
Total Suspended Solids	mg/L	-	< 3	5	< 3	< 3	< 3	5	3		5	3	<3	< 3	11	6	9
Alkalinity	mg/L	-	157	117	164	191	105	128	180	205	143	127	154	247	198	84	170
Hardness	mg/L	-	183	140	191	218	119	154	195	237	178	158	197	273	233	127	235
Ammonia	mg/L	-	0.09	0.07	0.24	0.12	1	0.17	0.08	0.08	0.07	0.12	0.11	< 0.01	0.08	0.03	0.03
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	0.01	< 0.01	**0.11**	0.02	<0.01	<0.01	<0.01	**0.03**	<0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-	60.9	41.7	52.8	70.3	30.9	46.5	58.4	80	55.6	48.5	60.8	97.5	80.9	33.3	77.4
Chloride	mg/L	-	43.3	54.5	54.1	44.5	35.7	45.5	55.8	33.3	44.8	37.2	48.1	47.6	27	64.4	33.9
DOC	mg/L	-	13	7.3	6	5.2	8.2	8.6	3	8.3	9	11.2	10.5	4.3	10.3	5.4	9.2
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.1	0.1	0.1
Iron	mg/L	0.3	0.054	0.068	0.043	0.062	0.035	0.054	0.054	0.061	0.062	0.026	0.059	0.068	0.088	0.115	0.064
Magnesium	mg/L	-	8.45	8.76	11.2	7.72	7.99	9.25	12	9	9.4	8.94	10.8	7.05	7.55	10.8	10.2
Manganese	mg/L	-	0.014	0.035	0.012	0.038	0.022	0.039	0.034	0.034	0.025	0.011	0.017	0.018	0.018	0.022	0.01
Nitrate	mg/L	-	0.16	0.08	0.1	0.78	< 0.05	0.09	0.11	1.72	0.14	<0.05	0.07	1.7	2	< 0.1	1.4
Nitrite	mg/L	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	0.2	< 0.1	< 0.1
TKN	mg/L	-	0.9	1.1	0.9	0.8	1.3	0.8	0.9	0.7	0.8	0.8	0.2	0.5	0.9	0.9	0.7
Sodium	mg/L	-	24.4	25.8	19.9	21.7	21.2	27.7	24.6	18.3	24.5	19.6	26.3	25.6	16.5	38.1	20.1
Sulphate	mg/L	-	7	9	12	13	10	10	10	14	11	7	11	14	11	14	17
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	0.03	0.03	**0.04**	0.01	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.01	0.02	**0.04**	0.03	0.03
Potassium	mg/L	-	0.7	0.9	2	2	0.2	1.4	3.5	2.1	1	0.9	2.8	2.2	1.9	2.4	2.7
Aluminum	mg/L	0.075	0.03	< 0.01	0.01	0.02	< 0.01	0.04	<0.01	0.04	0.02	0.01	0.03	0.04	**0.09**	0.07	0.07
Antimony	mg/L	-	0.0004	0.0004	0.0003	0.0003	0.0003	0.0001	0.0004	0.0003	0.0004	0.0003	0.0004	< 0.0001	0.0001	0.0004	< 0.0001
Arsenic	mg/L	0.1	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003	0.0004	0.0002	0.0003	0.0003	0.0003	0.0002	0.0004	0.0005	0.0003
Barium	mg/L	-	0.032	0.029	0.038	0.034	0.015	0.035	0.043	0.034	0.032	0.035	0.04	0.032	0.038	0.036	0.042
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.014	0.007	0.012	0.012	0.013	0.016	0.018	0.011	0.01	0.017	0.014	0.012	0.013	0.012	0.013
Cadmium	mg/L	0.0002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	0.00005	< 0.00002
Chromium	mg/L	0.1	0.001	< 0.001	< 0.001	0.002	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.0002	0.0003	< 0.0002
Cobalt	mg/L	0.0006	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	0.0002	0.0002	0.0002	<0.0001	0.0002	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	0.005	0.0004	0.0005	0.0004	0.0004	0.0002	0.0006	0.0006	0.0006	0.0005	0.0004	0.0004	0.0005	0.0003	0.0037	0.0008
Lead	mg/L	0.025	0.0001	0.00008	0.00007	0.00011	0.00009	0.00008	0.00006	0.00008	0.00008	0.00004	0.0001	0.00005	0.00026	0.00063	0.0002
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0003	0.0002	0.0003	0.0003	0.0002	0.0002	0.0001	0.0003	0.0002	0.0001	0.0002	0.0002	0.0003	0.0003	0.0003
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0004	0.0007	0.0009	0.0006	0.0002	<0.0002	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	0.0001	<0.0001	**0.0002**	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	-	0.201	0.175	0.201	0.199	0.13	0.176	0.225	0.217	0.192	0.19	0.202	0.281	0.237	0.187	0.247
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0004	0.0004	0.0002	0.0004	0.0004	0.0003	0.0003	0.0004	0.0004	0.0002	0.0004	0.0002	0.0007	0.0005	0.0005
Zinc	mg/L	0.03	0.006	< 0.005	0.011	< 0.005	< 0.005	0.005	<0.005	0.01	<0.005	<0.005	0.007	< 0.005	0.008	0.02	< 0.005
Cyanide	mg/L	0.005				< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				
Turbidity	NTU	-				2.2	2	2.4	1.6	1.6	1.6	1.2	2.9				
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Emb C 28-Apr-16	Emb C 14-Jun-16	Emb C 9-Aug-16	Emb C 12-Oct-16	Emb C 24-Apr-17	Emb C 22-Jun-17	Emb C 24-Aug-17	Emb C 17-Oct-17	Emb C 9-May-18	Emb C 26-Jun-18	Emb C 28-Aug-18	Emb C 10-Oct-18	Emb C 25-Apr-19	Emb C 18-Jul-19	Emb C 12-Aug-19
pH -Lab	pH units	6.5-8.5	8.37	9.1	8.14	8.21	8.3	8.16	8.06	8.15	8.16	8.54	8.05	8.03	8.19	8.45	7.97
Conductivity	uS/cm	-	489	383	476	540	479	483	407	490	509	397	1130	608	467	265	426
BOD	mg/L	-	< 2	3	< 3	< 3	<3	<3	<3	<3	< 3	4	< 2	3	< 3	< 3	< 3
COD	mg/L	-	24	41	29	27	24	29	29	29	34	56	35	37	28	37	28
Total Dissolved Solids	mg/L	-	258	202	252	271	252	242	207	257	300	213	616	320	239	128	216
Total Suspended Solids	mg/L	-	3	4	4	< 3	6	4	3	6	< 3	8	13	< 3	7	3	7
Alkalinity	mg/L	-	179	87	103	126	157	163	124	138	184	108	184	163	167	66	54
Hardness	mg/L	-	208	119	136	154	198	195	154	192	208	133	246	209	211	89	82
Ammonia	mg/L	-	0.06	0.05	0.02	0.04	0.08	0.1	0.02	0.93	0.28	0.13	4.9	0.64	0.07	0.05	0.05
Un-ionized Ammonia	mg/L	0.02	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	**0.4**	0.02	< 0.01	**0.13**	**0.04**	< 0.01	0.02	< 0.01
Calcium	mg/L	-	68.6	31.8	36.2	41.6	63.6	63.1	47.7	58.1	67.3	39.5	81.8	65.1	72.5	22.2	18.9
Chloride	mg/L	-	35.6	59.3	77.4	77.7	37.8	35.4	38.9	50.5	61	54	198	72	29.7	32.2	90.6
DOC	mg/L	-	8.6	9.5	7.4	8.1	9.4	10.2	10.3	8.5	8.2	14.5	6.5	10.3	9.3	10.8	9
Fluoride	mg/L	-	0.2	0.1	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	0.058	0.069	0.029	< 0.005	0.044	0.081	0.104	0.068	0.06	0.034	0.08	0.07	0.08	0.024	0.02
Magnesium	mg/L	-	8.87	9.55	11	12.1	8.44	8.03	9.95	11.3	8.83	9.06	14.1	11.3	6.74	6.29	8.47
Manganese	mg/L	-	0.03	0.014	0.023	0.028	0.028	0.029	0.029	0.029	0.049	0.028	0.06	0.029	0.014	0.023	0.004
Nitrate	mg/L	-	0.8	0.1	0.2	< 0.1	1	1.06	< 0.05	0.07	0.31	< 0.05	0.72	0.4	2.1	< 0.05	0.06
Nitrite	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.16	0.07	< 0.05	< 0.05	< 0.05
TKN	mg/L	-	0.9	0.9	0.8	0.9	0.7	0.9	0.7	1.7	1	1.3	6.4	1.6	0.7	0.9	0.7
Sodium	mg/L	-	19.8	33.5	41	44.6	22.7	25.4	24	33	32.7	33.6	134	41.7	14.9	21.8	48.5
Sulphate	mg/L	-	12	15	21	21	20	11	11	16	13	11	60	23	13	6	17
Phenols	mg/L	0.001	< 0.001	< 0.001	**0.002**	**0.008**	**0.002**	**0.021**	**0.007**	**0.004**	< 0.001	< 0.001	**0.003**	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	0.03	**0.07**	**0.04**	0.03	0.02	0.01	0.02	0.03	**0.04**	**0.04**	**0.05**	**0.05**	0.03	0.02	0.03	0.01
Potassium	mg/L	-	2	0.6	2.3	3.7	1.9	1	1.2	3.9	2.7	0.6	11.7	3.8	2.3	< 0.1	0.6
Aluminum	mg/L	0.075	0.04	0.03	0.03	0.02	0.06	0.06	**0.09**	0.07	**0.08**	0.05	**0.23**	0.05	0.05	0.05	0.03
Antimony	mg/L	-	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0002	0.0005	< 0.0001	< 0.0001	0.0002	0.0003	0.0001	0.0004	0.0003	0.0005
Arsenic	mg/L	0.1	0.0003	0.0003	0.0005	0.0004	0.0004	0.0005	0.0004	0.0005	0.0004	0.0005	0.0003	0.0003	0.0002	0.0003	0.0003
Barium	mg/L	-	0.023	0.012	0.034	0.032	0.028	0.037	0.057	0.054	0.048	0.022	0.063	0.057	0.035	0.027	0.021
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	< 0.005	0.022	0.033	0.036	0.009	0.015	0.021	0.027	0.017	0.02	0.132	0.028	0.007	0.023	0.038
Cadmium	mg/L	0.0002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.000014	< 0.000014	0.000064	0.000051	0.000016	0.000063	< 0.000015	0.000048	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.1	< 0.0002	0.0004	0.0005	0.0004	< 0.0015	< 0.001	0.001	0.001	< 0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0006	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0002	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Copper	mg/L	0.005	0.0011	0.0004	0.0004	0.0004	0.0004	0.0007	**0.0065**	**0.0064**	0.0006	**0.0074**	0.0006	**0.0059**	0.0008	0.0004	0.0002
Lead	mg/L	0.025	0.00021	0.00049	0.00009	0.00004	0.00006	0.00013	0.00042	0.00051	0.00018	0.0006	0.00038	0.00038	0.00015	0.00008	0.00007
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0003	0.0002	0.0002	0.0002	0.0004	0.0004	0.0005	0.0004	0.0008	0.0003	0.0071	0.0003	0.0003	0.0002	0.0006
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	0.00005	**0.00014**	< 0.00002	0.00006	**0.00021**	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.211	0.153	0.163	0.187	0.183	0.211	0.203	0.189	0.202	0.176	0.306	0.238	0.181	0.112	0.123
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0004	0.0006	0.0006	0.0003	0.0005	0.0005	0.0002	0.0003	0.0006	0.0006	0.0003	0.0003	0.0005	0.0004	0.0006
Zinc	mg/L	0.03	< 0.005	< 0.005	< 0.005	< 0.005	**0.079**	0.009	0.03	**0.055**	0.014	0.016	**0.032**	0.018	0.008	0.006	0.006
Cyanide	mg/L	0.005						< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		
Turbidity	NTU	-												2.8	2.9		
Tannins & Lignins	mg/L	-										4.1	6.1				

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Emb C 8-Oct-19	Emb C 27-Apr-20	Emb C 24-Jun-20	Emb C 10-Aug-20	Emb C 22-Oct-20	Emb C 26-Apr-21	Emb C 15-Jun-21	Emb C 10-Aug-21	Emb C 12-Oct-21	Emb C 26-Apr-22	Emb C 21-Jun-22	Emb C 24-Aug-22	Emb C 17-Oct-22	Emb C 24-Apr-23	Emb C 8-Jun-23
pH -Lab	pH units	6.5-8.5	8.08	8	7.98	7.93	8.17	8.21	8.16	8.02	7.99	7.86	8.17	8.13	7.94	8.17	8
Conductivity	uS/cm	-	577	547	484	469	606	540	514	423	536	546	426	505	505	552	478
BOD	mg/L	-	< 3	< 3	< 3	4	< 3	< 3	< 3	3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
COD	mg/L	-	24	25	33	36	16	29	38	45	39	31	36	33	20	17	< 5
Total Dissolved Solids	mg/L	-	309	277	261	244	331	289	274	224	290	288	233	257	263	286	238
Total Suspended Solids	mg/L	-	6	4	5	18	3	4	3	8	10	5	< 3	3	< 3	< 3	< 3
Alkalinity	mg/L	-	144	182	133	82	192	184	133	123	146	201	150	110	165	192	139
Hardness	mg/L	-	189	250	180	139	235	227	179	153	155	233	182	138	194	219	160
Ammonia	mg/L	-	1.07	0.11	0.09	0.02	0.19	0.14	1	0.24	1.61	0.32	0.12	0.92	0.18	0.12	0.41
Un-ionized Ammonia	mg/L	0.02	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	**0.08**	< 0.01	**0.04**	0.01	0.01	**0.06**	< 0.01	< 0.01	**0.04**
Calcium	mg/L	-	56.9	71	59.8	38.5	67.9	77.7	43	40	46.6	78.3	57.4	39.8	56.1	70	43.3
Chloride	mg/L	-	81	47.7	60.2	81.9	74.8	47	78.3	55.3	78.6	40.4	41.3	81.6	53.6	51.8	57.3
DOC	mg/L	-	7.6	8	10.2	8.2	7.5	8.7	9.8	10.1	5.9	9	12.8	6.3	5.5	5.2	7
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2
Iron	mg/L	0.3	0.063	0.064	0.078	0.075	0.026	0.056	0.091	0.062	0.036	0.144	0.065	0.053	0.034	0.068	0.133
Magnesium	mg/L	-	11.3	7.18	10.2	10.3	11.3	8.74	9.97	9.49	9.37	9.1	8.43	9.33	11.9	8.02	8.39
Manganese	mg/L	-	0.032	0.032	0.071	0.055	0.002	0.024	0.032	0.069	0.032	0.034	0.02	0.034	0.012	0.03	0.029
Nitrate	mg/L	-	< 0.05	2.05	0.07	0.11	0.26	1.21	0.08	< 0.05	0.1	1.36	0.58	0.09	0.54	1.43	0.28
Nitrite	mg/L	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07
TKN	mg/L	-	1.8	0.7	1	1.1	0.9	1	2.2	1.4	2.7	0.8	1	2.4	1	0.8	1.2
Sodium	mg/L	-	48.5	19.9	32.7	42.3	38.5	23.6	40	29.7	37.4	21.2	22.7	39.6	23.8	23.3	29.4
Sulphate	mg/L	-	18	20	17	19	20	19	18	13	23	15	11	13	16	16	14
Phenols	mg/L	0.001	< 0.002	< 0.002	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	0.03	**0.04**	0.02	**0.04**	**0.04**	0.02	**0.06**	**0.05**	**0.05**	**0.09**	**0.04**	**0.04**	**0.04**	0.02	0.03	**0.04**
Potassium	mg/L	-	5.3	1.7	1	2	3.3	2.1	3.2	2.1	4.9	2	1.4	2.3	2.2	2.2	1.3
Aluminum	mg/L	0.075	0.04	0.06	0.03	0.03	0.06	0.05	0.04	0.01	0.02	0.05	0.04	0.02	0.02	0.03	0.03
Antimony	mg/L	-	0.0003	< 0.0001	0.0002	0.0004	0.0003	0.0003	0.0004	0.0005	0.0003	0.0003	0.0005	0.0003	0.0005	0.0004	0.0004
Arsenic	mg/L	0.1	0.0004	0.0003	0.0004	0.0003	0.0003	0.0003	0.0005	0.0004	0.0003	0.0003	0.0003	0.0004	0.0003	0.0003	0.0004
Barium	mg/L	-	0.042	0.028	0.045	0.044	0.045	0.037	0.026	0.059	0.038	0.043	0.03	0.03	0.04	0.033	0.022
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.041	0.009	0.112	0.114	0.028	0.014	0.032	0.009	0.028	0.012	0.01	0.021	0.018	0.013	0.018
Cadmium	mg/L	0.0002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.1	0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	0.002	< 0.001
Cobalt	mg/L	0.0006	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	0.0002	0.0001	0.0002	< 0.0001	0.0001	0.0002	< 0.0001
Copper	mg/L	0.005	0.0005	0.0012	0.0008	0.0004	0.0007	0.0005	0.0006	0.0003	0.0003	0.001	0.0004	0.0028	0.0004	0.0029	0.0006
Lead	mg/L	0.025	0.00024	0.00017	0.00015	0.0001	0.00014	0.00018	0.00022	0.00017	0.0001	0.00034	0.00014	0.00012	0.00009	0.00024	0.00028
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0004	0.0005	0.0004	0.0005	0.0004	0.0006	0.0004	0.0002	0.0003	0.0004	0.0003	0.0002	0.0003	0.0004	0.0005
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.199	0.179	0.22	0.179	0.219	0.213	0.17	0.172	0.169	0.226	0.187	0.177	0.215	0.201	0.159
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00007	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0003	0.0005	0.0003	0.0003	0.0003	0.0005	0.0005	0.0005	0.0003	0.0006	0.0005	0.0003	0.0003	0.0005	0.0006
Zinc	mg/L	0.03	0.007	0.019	0.013	0.014	0.005	< 0.005	0.013	0.007	0.016	< 0.005	< 0.005	0.006	< 0.005	< 0.005	0.009
Cyanide	mg/L	0.005														< 0.005	< 0.005
Turbidity	NTU	-					2.7	5.4	4.6	0.8						2.5	5.1
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Emb C 16-Aug-23	Emb C 5-Oct-23	Emb C 25-Apr-24	Emb C 11-Jun-24	Emb C 15-Aug-24	Emb C 10-Oct-24	Near shore #1 25-Apr-19	Near shore #1 12-Aug-19	Near shore #1 8-Oct-19	Near shore #1 27-Apr-20	Near shore #1 24-Jun-20	Near shore #1 22-Oct-20	Near shore #1 26-Apr-21	Near shore #1 15-Jun-21	Near shore #1 10-Aug-21
pH -Lab	pH units	6.5-8.5	9.07	7.65	8.2	7.28	7.77	7.98	8.09	8.05	8.02	7.95	7.89	8.15	8.12	9.01	7.99
Conductivity	uS/cm	-	360	536	520	402	505	476									
BOD	mg/L	-	4	<3	<3	<3	<3	<3									
COD	mg/L	-	39	35	35	32	51	26									
Total Dissolved Solids	mg/L	-	196	291	291	217	281	270									
Total Suspended Solids	mg/L	-	11	<3		<3	16	<3	< 3	< 3	< 3	3	5	5	4	6	9
Alkalinity	mg/L	-	76	121	205	118	187	143									
Hardness	mg/L	-	90.4	142	242	149	221	193									
Ammonia	mg/L	-	1.36	0.08	0.06	<0.05	0.73	0.12	0.12	0.06	0.28	0.14	0.08	0.04	0.04	0.03	0.03
Un-ionized Ammonia	mg/L	0.02	**0.04**	<0.01	<0.01	<0.01	**0.11**	<0.01									
Calcium	mg/L	-	22.8	37.3	82	44	73.2	58.6									
Chloride	mg/L	-	64.2	95.9	33.9	49.9	42.9	60.8									42.5
DOC	mg/L	-	8.8	3.6	8.1	9.7	13.4	10.2									
Fluoride	mg/L	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1									
Iron	mg/L	0.3	0.021	0.021	0.071	0.022	0.05	0.022	0.069	0.03	0.041	0.056	0.067	0.052	0.094	0.041	
Magnesium	mg/L	-	8.13	11.9	9.02	9.5	9.19	11.2									
Manganese	mg/L	-	0.017	0.051	0.057	0.009	0.009	0.003									
Nitrate	mg/L	-	0.09	0.24	1.84	<0.05	0.4	0.21									0.06
Nitrite	mg/L	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05									< 0.05
TKN	mg/L	-	1.1	1	0.6	0.8	1.9	0.8									
Sodium	mg/L	-	37.3	49.8	18.8	28.7	25.6	35.1									
Sulphate	mg/L	-	14	15	14	13	13	14									< 1
Phenols	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001									
Phosphorus	mg/L	0.03	**0.04**	0.02	0.02	0.02	**0.04**	0.01									
Potassium	mg/L	-	1.5	6.9	2.3	0.6	2.7	3.8									
Aluminum	mg/L	0.075	0.04	<0.01	0.05	0.01	0.06	0.03									
Antimony	mg/L	-	0.0002	0.0005	0.0004	0.0004	0.0004	0.0004									
Arsenic	mg/L	0.1	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003									
Barium	mg/L	-	0.019	0.034	0.035	0.034	0.046	0.037									
Beryillium	mg/L	1.1	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001									
Boron	mg/L	0.2	0.03	0.047	0.012	0.014	0.027	0.023									
Cadmium	mg/L	0.0002	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015									
Chromium	mg/L	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001									
Cobalt	mg/L	0.0006	<0.0001	0.0002	0.0002	0.0002	0.0001	0.0002									
Copper	mg/L	0.005	0.0015	0.0008	0.0006	0.0006	0.0007	0.0006									
Lead	mg/L	0.025	0.00008	0.00006	0.00009	0.00004	0.00009	0.00003									
Mercury	mg/L	-	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002									
Molybdenum	mg/L	0.04	0.0005	0.0008	0.0003	0.0002	0.0003	0.0003									
Nickel	mg/L	0.025	0.0008	0.0006	0.0009	0.0006	0.0004	0.0002									
Selenium	mg/L	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001									
Silver	mg/L	0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001									
Strontium	mg/L	-	0.119	0.194	0.222	0.178	0.235	0.204									
Thallium	mg/L	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005									
Vanadium	mg/L	-	0.0004	0.0002	0.0004	0.0003	0.0003	0.0003									
Zinc	mg/L	0.03	0.005	<0.005	0.027	<0.005	<0.005	<0.005									
Cyanide	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005									
Turbidity	NTU	-	5.2	4.7	2.8	0.9	6.9	0.8								1.8	2.7
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Near shore #1 12-Oct-21	Near shore #1 26-Apr-22	Near shore #1 21-Jun-22	Near shore #1 24-Aug-22	Near shore #1 17-Oct-22	Near shore #1 24-Apr-23	Near shore #1 8-Jun-23	Near shore #1 16-Aug-23	Near shore #1 5-Oct-23	Near shore #1 25-Apr-24	Near shore #1 11-Jun-24	Near shore #1 10-Oct-24	Near shore #1F 25-Apr-19	Near shore #1F 12-Aug-19	Near shore #1F 8-Oct-19
pH -Lab	pH units	6.5-8.5	7.52	7.83	8.14	8.15	8.11	7.97	7.45	7.2	7.35	8.12	8.66	7.77			
Conductivity	uS/cm	-															
BOD	mg/L	-															
COD	mg/L	-															
Total Dissolved Solids	mg/L	-															
Total Suspended Solids	mg/L	-	< 3	< 3	< 3	3	4	<3	4	8	3	<3	6	<3			
Alkalinity	mg/L	-															
Hardness	mg/L	-															
Ammonia	mg/L	-	0.07	0.15	0.02	0.01	0.03	0.37	0.12	0.11	0.07	0.17	<0.05	0.1			
Un-ionized Ammonia	mg/L	0.02															
Calcium	mg/L	-															
Chloride	mg/L	-															
DOC	mg/L	-															
Fluoride	mg/L	-															
Iron	mg/L	0.3	0.114	0.041	0.062	0.021	0.025	0.059	0.12	0.026	0.045	0.068	0.05	0.031	0.039	0.03	0.047
Magnesium	mg/L	-															
Manganese	mg/L	-															
Nitrate	mg/L	-															
Nitrite	mg/L	-															
TKN	mg/L	-															
Sodium	mg/L	-															
Sulphate	mg/L	-															
Phenols	mg/L	0.001															
Phosphorus	mg/L	0.03															
Potassium	mg/L	-															
Aluminum	mg/L	0.075															
Antimony	mg/L	-															
Arsenic	mg/L	0.1															
Barium	mg/L	-															
Beryillium	mg/L	1.1															
Boron	mg/L	0.2															
Cadmium	mg/L	0.0002															
Chromium	mg/L	0.1															
Cobalt	mg/L	0.0006															
Copper	mg/L	0.005															
Lead	mg/L	0.025															
Mercury	mg/L	-															
Molybdenum	mg/L	0.04															
Nickel	mg/L	0.025															
Selenium	mg/L	-															
Silver	mg/L	0.0001															
Strontium	mg/L	-															
Thallium	mg/L	-															
Vanadium	mg/L	-															
Zinc	mg/L	0.03															
Cyanide	mg/L	0.005															
Turbidity	NTU	-	1.8			0		1.3	1.7	1.6	1.8	1.8	1	1.4			
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Near Shore #1F 24-Jun-20	Near shore #1F 22-Oct-20	Near shore #1F 26-Apr-21	Near shore #1F 15-Jun-21	Near shore #1F 12-Oct-21	Near shore #1F 26-Apr-22	Near shore #1F 21-Jun-22	Near shore #1F 24-Aug-22	Near shore #1F 17-Oct-22	Near shore #1F 24-Apr-23	Near shore #1F 8-Jun-23	Near shore #1F 16-Aug-23	Near shore #1F 5-Oct-23	Near shore #2 25-Apr-19	Near shore #2 12-Aug-19
pH -Lab	pH units	6.5-8.5						0	0	0	0					8.03	7.93
Conductivity	uS/cm	-															
BOD	mg/L	-															
COD	mg/L	-															
Total Dissolved Solids	mg/L	-															
Total Suspended Solids	mg/L	-														8	< 3
Alkalinity	mg/L	-															
Hardness	mg/L	-	173														
Ammonia	mg/L	-														0.07	0.05
Un-ionized Ammonia	mg/L	0.02															
Calcium	mg/L	-	53.9														
Chloride	mg/L	-															
DOC	mg/L	-															
Fluoride	mg/L	-															
Iron	mg/L	0.3	0.024	0.036	0.033	0.03	0.045	0.032	0.029	< 0.005	< 0.005	0.021	0.035	<0.005	0.014	0.084	0.054
Magnesium	mg/L	-	9.21														
Manganese	mg/L	-	0.055														
Nitrate	mg/L	-															
Nitrite	mg/L	-															
TKN	mg/L	-															
Sodium	mg/L	-	24.6														
Sulphate	mg/L	-															
Phenols	mg/L	0.001															
Phosphorus	mg/L	0.03	< 0.1														
Potassium	mg/L	-	0.6														
Aluminum	mg/L	0.075	0.03														
Antimony	mg/L	-	< 0.0001														
Arsenic	mg/L	0.1	0.0004														
Barium	mg/L	-	0.028														
Beryillium	mg/L	1.1	< 0.002														
Boron	mg/L	0.2	0.022														
Cadmium	mg/L	0.0002	< 0.000015														
Chromium	mg/L	0.1	< 0.001														
Cobalt	mg/L	0.0006	< 0.005														
Copper	mg/L	0.005	0.0006														
Lead	mg/L	0.025	0.00008														
Mercury	mg/L	-															
Molybdenum	mg/L	0.04	0.0002														
Nickel	mg/L	0.025	< 0.01														
Selenium	mg/L	-	< 0.001														
Silver	mg/L	0.0001	< 0.0001														
Strontium	mg/L	-	0.183														
Thallium	mg/L	-	< 0.005														
Vanadium	mg/L	-	0.0004														
Zinc	mg/L	0.03	< 0.005														
Cyanide	mg/L	0.005															
Turbidity	NTU	-	0														
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Near shore #2 8-Oct-19	Near shore #2 27-Apr-20	Near Shore #2 24-Jun-20	Near shore #2 22-Oct-20	Near shore #2 26-Apr-21	Near shore #2 15-Jun-21	Near shore #2 12-Oct-21	Near shore #2 26-Apr-22	Near shore #2 21-Jun-22	Near shore #2 24-Aug-22	Near shore #2 17-Oct-22	Near shore #2 24-Apr-23	Near shore #2 8-Jun-23	Near shore #2 16-Aug-23	Near shore #2 5-Oct-23
pH -Lab	pH units	6.5-8.5	8.07	8.04	8.14	8.01	7.99	9.29	7.88	8.05	7.75	8.22	7.78	7.87	8.23	8.36	7.74
Conductivity	uS/cm	-															
BOD	mg/L	-															
COD	mg/L	-															
Total Dissolved Solids	mg/L	-															
Total Suspended Solids	mg/L	-	4	3	8	5	4	4	6	< 3	4	< 3	3	<3	7	<3	12
Alkalinity	mg/L	-															
Hardness	mg/L	-															
Ammonia	mg/L	-	0.09	0.08	0.05	0.05	0.06	0.05	0.04	0.12	0.02	< 0.01	< 0.01	0.07	0.18	<0.05	0.14
Un-ionized Ammonia	mg/L	0.02															
Calcium	mg/L	-															
Chloride	mg/L	-															
DOC	mg/L	-															
Fluoride	mg/L	-															
Iron	mg/L	0.3	0.033	0.063	0.091	0.078	0.058	0.077	0.123	0.075	0.148	0.051	0.059	0.064	0.18	0.021	0.1
Magnesium	mg/L	-															
Manganese	mg/L	-															
Nitrate	mg/L	-															
Nitrite	mg/L	-															
TKN	mg/L	-															
Sodium	mg/L	-															
Sulphate	mg/L	-															
Phenols	mg/L	0.001															
Phosphorus	mg/L	0.03															
Potassium	mg/L	-															
Aluminum	mg/L	0.075															
Antimony	mg/L	-															
Arsenic	mg/L	0.1															
Barium	mg/L	-															
Beryillium	mg/L	1.1															
Boron	mg/L	0.2															
Cadmium	mg/L	0.0002															
Chromium	mg/L	0.1															
Cobalt	mg/L	0.0006															
Copper	mg/L	0.005															
Lead	mg/L	0.025															
Mercury	mg/L	-															
Molybdenum	mg/L	0.04															
Nickel	mg/L	0.025															
Selenium	mg/L	-															
Silver	mg/L	0.0001															
Strontium	mg/L	-															
Thallium	mg/L	-															
Vanadium	mg/L	-															
Zinc	mg/L	0.03															
Cyanide	mg/L	0.005															
Turbidity	NTU	-												1.1	1.1	1	8.6
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Near shore #2 25-Apr-24	Near shore #2 11-Jun-24	Near shore #2 10-Oct-24	Near shore #2F 25-Apr-19	Near shore #2F 12-Aug-19	Near shore #2F 8-Oct-19	Near Shore #2F 24-Jun-20	Near shore #2F 22-Oct-20	Near shore #2F 26-Apr-21	Near shore #2F 15-Jun-21	Near shore #2F 12-Oct-21	Near shore #2F 26-Apr-22	Near shore #2F 21-Jun-22	Near shore #2F 24-Aug-22	Near shore #2F 17-Oct-22
pH -Lab	pH units	6.5-8.5	8.06	8.15	8.03									0	0	0	0
Conductivity	uS/cm	-															
BOD	mg/L	-															
COD	mg/L	-															
Total Dissolved Solids	mg/L	-															
Total Suspended Solids	mg/L	-	8	<3	4												
Alkalinity	mg/L	-															
Hardness	mg/L	-							151								
Ammonia	mg/L	-	0.15	0.85	0.08												
Un-ionized Ammonia	mg/L	0.02															
Calcium	mg/L	-							46.9								
Chloride	mg/L	-															
DOC	mg/L	-															
Fluoride	mg/L	-															
Iron	mg/L	0.3	0.076	0.047	0.048	0.053	0.027	0.038	0.027	0.044	0.033	0.048	0.038	0.042	0.069	0.015	< 0.005
Magnesium	mg/L	-							8.33								
Manganese	mg/L	-							0.009								
Nitrate	mg/L	-															
Nitrite	mg/L	-															
TKN	mg/L	-															
Sodium	mg/L	-							27.4								
Sulphate	mg/L	-															
Phenols	mg/L	0.001															
Phosphorus	mg/L	0.03							< 0.1								
Potassium	mg/L	-							0.3								
Aluminum	mg/L	0.075							0.03								
Antimony	mg/L	-							< 0.0001								
Arsenic	mg/L	0.1							0.0003								
Barium	mg/L	-							0.027								
Beryillium	mg/L	1.1							< 0.002								
Boron	mg/L	0.2							0.035								
Cadmium	mg/L	0.0002							< 0.000015								
Chromium	mg/L	0.1							< 0.001								
Cobalt	mg/L	0.0006							< 0.005								
Copper	mg/L	0.005							0.0006								
Lead	mg/L	0.025							0.00005								
Mercury	mg/L	-															
Molybdenum	mg/L	0.04							0.0001								
Nickel	mg/L	0.025							< 0.01								
Selenium	mg/L	-							< 0.001								
Silver	mg/L	0.0001							< 0.0001								
Strontium	mg/L	-							0.186								
Thallium	mg/L	-							< 0.005								
Vanadium	mg/L	-							0.0002								
Zinc	mg/L	0.03							< 0.005								
Cyanide	mg/L	0.005															
Turbidity	NTU	-	1.2	0.7	1												
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Near shore #2F 24-Apr-23	Near shore #2F 8-Jun-23	Near shore #2F 16-Aug-23	Near shore #2F 5-Oct-23	Scg-Down 28-Apr-15	Scg-Down 17-Jun-15	Scg-Down 18-Aug-15	Scg-Down 17-Nov-15	Scg-Down 28-Apr-16	Scg-Down 14-Jun-16	Scg-Down 9-Aug-16	Scg-Down 12-Oct-16	Scg-Down 24-Apr-17	Scg-Down 22-Jun-17	Scg-Down 24-Aug-17
pH -Lab	pH units	6.5-8.5					8.02	8.14	8.29	8.24	8.37	8.81	8.55	8.22	8.31	8.07	8.14
Conductivity	uS/cm	-					478	503	376	485	500	382	416	504	477	486	424
BOD	mg/L	-					4	< 2	< 3	< 2	< 2	3	< 3	< 3	<3	<3	<3
COD	mg/L	-					65	31	24	16	26	35	31	29	22	34	31
Total Dissolved Solids	mg/L	-					257	271	191	262	264	201	211	254	242	254	208
Total Suspended Solids	mg/L	-					86	6	5	9	6	< 3	3	3	6	8	3
Alkalinity	mg/L	-					189	194	96	168	183	91	80	122	157	169	139
Hardness	mg/L	-					220	232	125	217	211	123	108	160	195	222	174
Ammonia	mg/L	-					0.01	0.08	0.02	0.02	0.07	0.03	0.03	0.07	0.05	0.11	0.05
Un-ionized Ammonia	mg/L	0.02					< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-					75.7	80.4	34.9	71	70.1	33.8	26.9	44	59.9	73.3	48.9
Chloride	mg/L	-					29	27.5	50.2	35.8	36.5	56.9	70	69.2	36.2	32.8	35.5
DOC	mg/L	-					6.9	9.8	6	9.1	8.4	9.3	8	8	9.1	11.1	10.6
Fluoride	mg/L	-					0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	< 0.1	0.1	< 0.1
Iron	mg/L	0.3	0.031	0.057	0.008	0.025	**0.548**	0.066	0.043	0.057	0.062	0.074	0.01	0.011	0.086	**0.4**	0.032
Magnesium	mg/L	-					7.39	7.64	9.17	9.56	8.75	9.32	9.82	12.1	8.21	9.38	8.63
Manganese	mg/L	-					0.086	0.016	0.027	0.009	0.04	0.018	0.024	0.026	0.027	0.054	0.019
Nitrate	mg/L	-					0.4	2	< 0.1	1.3	0.9	< 0.1	< 0.1	0.1	1	1.04	< 0.05
Nitrite	mg/L	-					< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05
TKN	mg/L	-					2.2	0.9	0.8	0.7	0.8	0.8	1.1	1	0.7	1.5	0.7
Sodium	mg/L	-					14.4	17.2	28.1	20	20.2	31.8	38.1	42.7	19	24.7	20
Sulphate	mg/L	-					11	11	9	17	13	13	16	20	18	11	10
Phenols	mg/L	0.001					< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.002**	**0.007**	**0.002**	**0.02**	**0.006**
Phosphorus	mg/L	0.03					**0.23**	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.01	**0.1**	0.03
Potassium	mg/L	-					2.8	1.8	0.6	2.6	2	0.6	1.6	3.5	1.6	1.1	0.9
Aluminum	mg/L	0.075					**0.26**	0.07	0.03	0.06	0.04	0.03	0.02	0.02	0.06	**0.27**	0.03
Antimony	mg/L	-					0.0001	0.0002	0.0004	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	0.0003	0.0002
Arsenic	mg/L	0.1					0.0008	0.0004	0.0005	0.0003	0.0003	0.0002	0.0004	0.0006	0.0004	0.0006	0.0004
Barium	mg/L	-					0.073	0.038	0.024	0.039	0.023	0.012	0.027	0.034	0.028	0.055	0.034
Beryillium	mg/L	1.1					< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2					0.01	0.013	< 0.006	0.012	< 0.005	0.021	0.026	0.034	0.007	0.019	0.018
Cadmium	mg/L	0.0002					0.00013	< 0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000014
Chromium	mg/L	0.1					0.0004	< 0.0002	0.0002	< 0.0002	< 0.0002	0.0011	0.0005	0.0003	< 0.0015	< 0.001	< 0.001
Cobalt	mg/L	0.0006					< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.0001	0.0001	< 0.0001
Copper	mg/L	0.005					0.0021	0.0002	0.0036	0.0011	0.0015	0.0002	0.0004	0.0004	0.0001	0.0011	0.0003
Lead	mg/L	0.025					0.00119	0.00019	0.00058	0.00018	0.00027	0.00038	0.00005	0.00007	0.00022	0.00081	0.00011
Mercury	mg/L	-					< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	0.00002
Molybdenum	mg/L	0.04					0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0005	0.0004	0.0003
Nickel	mg/L	0.025					< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-					< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001					< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00006	**0.00019**	< 0.00002	0.00007	**0.00018**	< 0.00002	< 0.00002
Strontium	mg/L	-					0.21	0.242	0.16	0.226	0.205	0.154	0.141	0.191	0.172	0.254	0.166
Thallium	mg/L	-					0.00012	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-					0.0008	0.0005	0.0005	0.0005	0.0005	0.0006	0.0007	0.0003	0.0005	0.0008	0.0003
Zinc	mg/L	0.03					0.024	< 0.005	**0.084**	**0.049**	< 0.005	< 0.005	< 0.005	< 0.005	**0.142**	**0.098**	0.005
Cyanide	mg/L	0.005															
Turbidity	NTU	-															
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Scg-Down 17-Oct-17	Scg-Down 9-May-18	Scg-Down 26-Jun-18	Scg-Down 28-Aug-18	Scg-Down 10-Oct-18	Scg-Down 25-Apr-19	Scg-Down 18-Jul-19	ScG-Down 12-Aug-19	ScG-Down 8-Oct-19	ScG-Down 27-Apr-20	ScG-Down 24-Jun-20	Scg-Down 10-Aug-20	Scg-Down 22-Oct-20	Scg-Down 26-Apr-21	Scg-Down 15-Jun-21
pH -Lab	pH units	6.5-8.5	8.13	8.18	8.7	8.15	8.08	8.17	8.15	7.99	8.01	8	7.87	8.03	8.15	8.22	7.88
Conductivity	uS/cm	-	430	424	410	422	555	459	478	329	501	540	444	434	512	549	465
BOD	mg/L	-	<3	< 3	< 3	3	3	< 3	4	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
COD	mg/L	-	29	31	33	37	35	32	38	33	27	26	28	33	18	29	43
Total Dissolved Solids	mg/L	-	213	238	222	226	285	231	236	167	259	279	238	223	273	293	248
Total Suspended Solids	mg/L	-	6	12	6	7	3	7	8	7	4	13	3	6	8	10	6
Alkalinity	mg/L	-	129	156	84	128	162	167	113	85	128	182	96	82	168	193	118
Hardness	mg/L	-	155	196	110	162	220	208	152	108	157	250	137	130	229	225	162
Ammonia	mg/L	-	0.3	0.07	0.38	0.21	0.3	0.09	0.05	0.06	0.3	0.1	0.12	0.01	0.07	0.14	0.69
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	0.02	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**
Calcium	mg/L	-	47.2	66.3	32.4	52.6	68.6	68.7	44.2	32.1	47.1	76.1	42.1	37	66.5	75	40.3
Chloride	mg/L	-	40.3	37.4	69.7	46.6	57.4	27.7	60.7	45.1	71.1	44.2	70.3	73.4	49.1	47.8	71.6
DOC	mg/L	-	8.5	8.2	10.1	9.4	10.4	9.4	9.3	9.7	8.7	7.6	8	7.9	9.4	8.7	10.3
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	0.064	0.159	0.055	0.081	0.071	0.079	0.07	0.037	0.036	0.125	0.125	0.079	0.057	0.089	0.12
Magnesium	mg/L	-	8.91	8.88	9.61	10.5	11.7	6.36	7.89	6.75	9.63	7.8	10.4	9.18	11.6	8.72	9.64
Manganese	mg/L	-	0.018	0.045	0.023	0.04	0.023	0.014	0.042	0.02	0.014	0.046	0.058	0.033	0.013	0.027	0.054
Nitrate	mg/L	-	0.14	0.36	0.06	< 0.05	0.23	2.04	< 0.05	0.06	< 0.05	2.1	0.09	0.08	0.15	1.13	0.08
Nitrite	mg/L	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
TKN	mg/L	-	1	0.9	1.3	1.1	1.1	0.9	1.1	0.8	1	0.8	1.1	1	0.8	1.1	2.3
Sodium	mg/L	-	23.4	20.7	43.8	26.9	34.5	13.4	40.9	23.9	38	20	38.4	36.3	24.9	24.3	35.5
Sulphate	mg/L	-	13	11	14	11	16	12	12	8	11	20	18	16	17	19	17
Phenols	mg/L	0.001	**0.005**	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	0.03	0.03	**0.06**	**0.04**	**0.05**	0.02	0.02	**0.05**	0.03	0.03	**0.04**	**0.06**	0.03	0.02	**0.08**	**0.11**
Potassium	mg/L	-	2.5	2.1	1.2	1.8	2.8	2.2	2.5	0.3	4.7	1.7	1.7	1.3	2.5	2	2.3
Aluminum	mg/L	0.075	0.06	**0.11**	0.03	0.06	0.06	0.05	0.03	0.02	0.04	0.05	0.02	0.03	0.06	0.05	0.04
Antimony	mg/L	-	0.0001	0.0003	0.0002	0.0001	0.0002	0.0005	0.0001	0.0001	0.0001	< 0.0001	0.0004	0.0004	0.0005	0.0004	0.0005
Arsenic	mg/L	0.1	0.0004	0.0004	0.0004	0.0004	0.0004	0.0002	0.0004	0.0003	0.0003	0.0003	0.0004	0.0004	0.0003	0.0003	0.0006
Barium	mg/L	-	0.033	0.047	0.036	0.049	0.055	0.034	0.034	0.022	0.036	0.03	0.039	0.043	0.046	0.038	0.025
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.017	0.01	0.025	0.03	0.022	0.007	0.029	0.02	0.03	0.009	0.103	0.11	0.017	0.013	0.026
Cadmium	mg/L	0.0002	0.000056	< 0.000015	< 0.000015	< 0.000015	0.000036	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000016	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.1	0.001	< 0.001	< 0.001	0.001	0.001	0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0006	< 0.0001	< 0.0001	0.0002	0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001
Copper	mg/L	0.005	**0.0069**	0.0009	0.0009	0.0003	**0.0057**	0.0011	0.0009	0.0007	0.0007	0.0014	0.0003	0.0002	0.0006	0.0006	0.0007
Lead	mg/L	0.025	0.00058	0.00082	0.00016	0.00022	0.00041	0.00014	0.00025	0.00018	0.00012	0.00046	0.00016	0.00009	0.00014	0.0003	0.0004
Mercury	mg/L	-	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0003	0.0003	0.0004	0.0004	0.0003	0.0004	0.0006	0.0003	0.0003	0.0005	0.0005	0.0003	0.0004	0.0005	0.0004
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.134	0.2	0.166	0.207	0.241	0.172	0.165	0.127	0.172	0.194	0.185	0.167	0.213	0.212	0.159
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0004	0.0007	0.0006	0.0005	0.0004	0.0005	0.0004	0.0005	0.0002	0.0006	0.0005	0.0004	0.0004	0.0006	0.0006
Zinc	mg/L	0.03	< 0.005	0.021	0.021	0.024	0.02	0.012	0.009	< 0.005	< 0.005	0.005	0.014	0.019	0.005	0.005	0.017
Cyanide	mg/L	0.005															
Turbidity	NTU	-															
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Scg-Down 10-Aug-21	Scg-Down 12-Oct-21	Scg-Down 26-Apr-22	Scg-Down 21-Jun-22	Scg-Down 24-Aug-22	Scg-Down 17-Oct-22	Scg-Down 24-Apr-23	Scg-Down 8-Jun-23	Scg-Down 16-Aug-23	Scg-Down 5-Oct-23	Scg-Down 25-Apr-24	Scg-Down 11-Jun-24	Scg-Down 15-Aug-24	Scg-Down (Dup) 15-Aug-24	Scg-Down 10-Oct-24
pH -Lab	pH units	6.5-8.5	8.1	7.81	7.87	8.2	8.01	7.94	8.15	7.92	7.44	7.73	8.18	7.38	7.53	7.62	8.07
Conductivity	uS/cm	-	387	405	614	412	525	502	538	424	447	539	519	446	483	485	462
BOD	mg/L	-	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	<3	<3	<3	<3	<3	<3	<3
COD	mg/L	-	41	42	32	32	34	19	19	< 5	33	32	30	34	33	33	30
Total Dissolved Solids	mg/L	-	203	216	307	227	267	268	283	216	250	295	288	241	267	263	255
Total Suspended Solids	mg/L	-	15	17	11	10	4	3	3	< 3	3	3		5	<3	3	<3
Alkalinity	mg/L	-	117	122	195	147	120	163	188	126	132	125	205	136	206	200	145
Hardness	mg/L	-	149	141	226	177	146	194	225	144	155	151	238	177	226	223	192
Ammonia	mg/L	-	0.09	0.19	0.58	0.15	1.18	0.26	0.2	0.15	1.58	0.07	0.1	0.85	0.1	1.42	0.19
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	0.02	0.02	**0.06**	0.01	< 0.01	0.02	**0.21**	<0.01	0.01	**0.05**	<0.01	**0.07**	<0.01
Calcium	mg/L	-	38.9	41.6	75.8	57.6	42.5	55.9	71.3	39.3	47.2	41.8	80.3	54.7	76.6	75.4	59.2
Chloride	mg/L	-	46.5	51.6	61.5	38	80.7	56	49	50.7	56.6	96.4	33.8	49.1	27.7	27.1	52.6
DOC	mg/L	-	9.9	6.6	8.2	12.8	6.3	5.2	8	4.9	7.7	2.5	8	9	12.3	14.4	9.6
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Iron	mg/L	0.3	0.135	0.151	0.12	0.113	0.066	0.066	0.08	0.091	0.053	0.032	0.076	0.07	0.077	0.075	0.3
Magnesium	mg/L	-	8.99	9.02	8.92	8.5	9.73	11.6	8.3	8.48	9.02	11.3	8.99	9.66	8.45	8.27	10.8
Manganese	mg/L	-	0.074	0.05	0.033	0.03	0.045	0.014	0.032	0.026	0.071	0.037	0.038	0.026	0.016	0.018	0.02
Nitrate	mg/L	-	0.06	0.12	1.31	0.48	0.09	0.43	1.23	0.14	0.21	0.31	1.7	0.19	0.24	0.24	0.11
Nitrite	mg/L	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TKN	mg/L	-	1.2	1.2	1	1	2.5	1.1	0.9	1	0.9	0.5	0.7	1.1	0.9	2.1	0.9
Sodium	mg/L	-	24	23.2	24.6	21.7	42.5	28.3	24.2	26.9	33	46.7	18.4	29.4	16.1	15.6	29.3
Sulphate	mg/L	-	12	15	16	11	13	15	15	13	13	16	14	13	11	11	12
Phenols	mg/L	0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus	mg/L	0.03	**0.06**	**0.06**	**0.04**	**0.04**	**0.05**	0.03	**0.04**	0.02	0.03	0.02	0.03	0.03	0.02	0.02	0.02
Potassium	mg/L	-	1.6	2.4	2.1	1.4	2.4	2.3	2.2	0.8	2.4	6.8	2.1	1.4	2.6	2.5	3.4
Aluminum	mg/L	0.075	0.01	0.03	0.05	0.04	< 0.01	0.02	0.03	0.02	0.04	0.02	0.05	0.03	0.03	0.04	0.03
Antimony	mg/L	-	0.0004	0.0004	0.0004	0.0003	0.0003	0.0004	0.0004	0.0004	0.0002	0.0007	0.0003	0.0004	0.0004	0.0002	0.0004
Arsenic	mg/L	0.1	0.0004	0.0003	0.0003	0.0004	0.0004	0.0003	0.0003	0.0004	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003
Barium	mg/L	-	0.032	0.033	0.041	0.032	0.032	0.04	0.035	0.018	0.036	0.033	0.035	0.032	0.047	0.046	0.039
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	0.2	< 0.005	0.013	0.015	0.01	0.023	0.02	0.013	0.016	0.026	0.042	0.011	0.014	0.018	0.018	0.018
Cadmium	mg/L	0.0002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.1	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	0.002	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0006	0.0002	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002
Copper	mg/L	0.005	0.0005	0.0004	0.0007	0.0005	0.0004	0.0006	0.0006	0.0004	0.001	0.0009	0.0006	0.0006	0.0005	0.0005	0.0006
Lead	mg/L	0.025	0.00046	0.00036	0.00033	0.00033	0.00015	0.00014	0.00019	0.00024	0.00013	0.00007	0.00014	0.00015	0.00011	0.00016	0.00013
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.04	0.0002	0.0002	0.0004	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004	0.0008	0.0003	0.0003	0.0003	0.0002	0.0003
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0006	0.0007	0.0005	0.0006	0.0003	0.0007	0.0003
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	0.0001	<0.0001	**0.0002**	<0.0001	<0.0001
Strontium	mg/L	-	0.155	0.153	0.22	0.186	0.187	0.216	0.208	0.153	0.174	0.193	0.219	0.194	0.23	0.223	0.199
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-	0.0007	0.0005	0.0005	0.0006	0.0004	0.0003	0.0005	0.0005	0.0003	0.0003	0.0005	0.0004	0.0003	0.0003	0.0003
Zinc	mg/L	0.03	0.015	0.017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.014	<0.005	0.009	<0.005	**0.057**	0.012	0.008
Cyanide	mg/L	0.005							< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Turbidity	NTU	-							3.3	3.7	2.8	1.6	2.9	2.4	1.5	2.1	1.7
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Scg-Down (Dup) 10-Oct-24	Scg-Up 29-Apr-15	Scg-Up 17-Jun-15	Scg-Up 18-Aug-15	Scg-Up 17-Nov-15	Scg-Up 28-Apr-16	Scg-Up 14-Jun-16	Scg-Up 9-Aug-16	Scg-Up 12-Oct-16	Scg-Up 24-Apr-17	Scg-Up 22-Jun-17	Scg-Up 24-Aug-17	Scg-Up 17-Oct-17	Scg-Up 1-Mar-18	Scg-Up 23-Apr-18
pH -Lab	pH units	6.5-8.5	7.95	8.33	8.09	8.16	8.26	8.39	8.43	8.02	8.22	8.24	8.17	8.09	8.08	8.23	8.41
Conductivity	uS/cm	-	467	415	490	412	470	480	409	368	476	465	471	391	388	528	506
BOD	mg/L	-	<3	3	< 2	< 3	< 2	< 2	6	< 3	< 3	<2	<3	<3	<3	< 3	< 3
COD	mg/L	-	27	18	32	27	14	24	21	34	26	26	33	35	34	10	12
Total Dissolved Solids	mg/L	-	256	223	261	206	262	257	214	185	244	235	240	207	207	278	263
Total Suspended Solids	mg/L	-	<3	5	6	< 3	9	< 3	5	5	< 3	4	3	4	6	3	3
Alkalinity	mg/L	-	147	163	205	149	164	182	122	117	154	155	186	134	117	230	228
Hardness	mg/L	-	191	187	229	168	230	218	149	140	199	192	212	168	175	270	230
Ammonia	mg/L	-	0.18	< 0.01	0.05	0.02	0.03	0.06	0.05	0.04	0.07	0.04	0.05	0.03	0.06	0.03	0.03
Un-ionized Ammonia	mg/L	0.02	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Calcium	mg/L	-	58.5	62.3	80	50.9	75.1	72.1	43.9	37.6	56.2	57	69.8	57.8	52.6	90.8	84.4
Chloride	mg/L	-	52.9	26.5	18.1	30.8	34.4	31.1	47.1	35.8	42.8	35	24.7	30.1	37	15.1	12.3
DOC	mg/L	-	9.7	7.5	11	8.3	9.1	8.3	8.7	8.9	9	8.2	11.8	10.9	8.7	5	5.1
Fluoride	mg/L	-	<0.1	< 0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	0.047	0.033	0.1	0.073	0.213	0.056	0.194	0.088	0.068	0.044	0.109	0.149	0.077	0.041	0.031
Magnesium	mg/L	-	10.9	7.67	7.09	9.82	10.2	9.19	9.48	11.2	14.2	7.98	8.45	10.2	10.7	6.2	4.65
Manganese	mg/L	-	0.018	0.016	0.011	0.016	0.019	0.028	0.031	0.03	0.03	0.014	0.017	0.107	0.035	0.008	0.003
Nitrate	mg/L	-	0.12	0.5	2.1	0.1	1.2	0.9	0.1	< 0.1	0.1	1	0.63	< 0.05	0.06	1.84	2.79
Nitrite	mg/L	-	<0.05	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
TKN	mg/L	-	0.8	0.6	1.2	0.8	0.7	0.7	0.9	0.9	0.9	0.7	0.9	0.8	0.8	0.4	0.4
Sodium	mg/L	-	29.4	14.4	10.6	16.6	19	17.9	25.6	18.4	24.4	16.9	16.8	18.1	22.7	13.7	11.1
Sulphate	mg/L	-	12	10	10	7	17	12	14	12	20	19	8	9	12	12	12
Phenols	mg/L	0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.002**	**0.004**	**0.003**	**0.005**	**0.006**	**0.002**	< 0.001	< 0.001
Phosphorus	mg/L	0.03	0.02	0.02	0.03	0.02	0.02	**0.06**	**0.04**	**0.04**	**0.04**	0.02	0.03	**0.05**	0.03	**0.05**	< 0.01
Potassium	mg/L	-	3	2.1	1.7	0.5	2.5	1.9	0.7	0.2	2.5	1.4	0.5	1.2	2.1	1.4	1.5
Aluminum	mg/L	0.075	0.03	0.04	0.07	0.04	**0.1**	0.03	0.03	0.04	0.04	0.05	0.06	**0.1**	0.05	0.07	0.06
Antimony	mg/L	-	0.0004	0.0001	< 0.0001	0.0002	0.0001	< 0.0001	0.0001	0.0003	0.0001	< 0.0001	0.0002	0.0002	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.1	0.0003	0.0002	0.0004	0.0005	0.0003	0.0003	0.0003	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0006	0.0002
Barium	mg/L	-	0.039	0.029	0.038	0.032	0.054	0.026	0.02	0.034	0.049	0.027	0.046	0.064	0.05	0.037	0.027
Beryillium	mg/L	1.1	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.017	0.008	0.01	< 0.006	0.012	< 0.005	0.014	0.013	0.017	0.006	0.011	0.016	0.019	0.006	0.007
Cadmium	mg/L	0.0002	<0.000015	< 0.00002	< 0.00002	0.00009	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	0.000066	0.00006	< 0.000014	< 0.000014
Chromium	mg/L	0.1	<0.001	0.0004	0.0002	0.0005	0.0054	< 0.0002	0.0004	0.0005	0.0005	< 0.001	< 0.001	0.001	0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0006	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.0001	< 0.0001	0.0002	0.0001	< 0.0001	< 0.0001
Copper	mg/L	0.005	0.0005	0.0004	0.0004	0.0046	0.0005	0.0005	0.0004	0.0005	0.0008	< 0.0001	0.0004	**0.0056**	**0.0064**	0.0004	0.0018
Lead	mg/L	0.025	0.0001	0.00008	0.00013	0.00103	0.00019	0.00008	0.00042	0.0003	0.00027	0.00003	0.00012	0.00063	0.00054	0.00004	0.00006
Mercury	mg/L	-	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0003	0.0003	0.0003	0.0002	0.001	0.0003	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002
Nickel	mg/L	0.025	0.0004	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	0.00006	< 0.00002	0.00009	**0.00014**	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	-	0.2	0.184	0.229	0.204	0.248	0.212	0.189	0.164	0.217	0.164	0.227	0.217	0.176	0.228	0.196
Thallium	mg/L	-	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0003	0.0005	0.0004	0.0005	0.0004	0.0004	0.0006	0.0007	0.0003	0.0004	0.0005	0.0003	0.0004	0.0005	0.0004
Zinc	mg/L	0.03	<0.005	< 0.005	**0.031**	0.009	**0.086**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.092**	**0.041**	**0.031**	< 0.005
Cyanide	mg/L	0.005	<0.005														
Turbidity	NTU	-	2.2														
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Scg-Up 9-May-18	Scg-Up 26-Jun-18	Scg-Up 28-Aug-18	Scg-Up 10-Oct-18	Scg-Up 25-Apr-19	Scg-Up 18-Jul-19	Scg-Up 12-Aug-19	Scg-Up 8-Oct-19	Scg-Up 8-Oct-19	Scg-Up 27-Apr-20	Scg-Up 24-Jun-20	Scg-Up 10-Aug-20	Scg-Up 22-Oct-20	Scg-Up 26-Apr-21	Scg-Up 15-Jun-21
pH -Lab	pH units	6.5-8.5	8.16	8.12	8.03	8.11	8.19	7.98	8.09	7.96	7.99	8.11	7.96	8.07	8.16	8.22	8.06
Conductivity	uS/cm	-	414	423	356	457	449	417	442	418	420	508	414	428	485	508	423
BOD	mg/L	-	< 3	< 3	< 2	2	< 3	4	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	4
COD	mg/L	-	34	25	32	39	26	35	38	54	20	22	32	27	13	24	34
Total Dissolved Solids	mg/L	-	231	223	199	238	235	201	223	220	224	267	220	219	259	277	226
Total Suspended Solids	mg/L	-	7	6	22	< 3	8	7	4	3	3	4	6	6	5	3	9
Alkalinity	mg/L	-	156	129	103	168	164	131	153	133	132	182	114	114	185	181	126
Hardness	mg/L	-	188	152	130	210	204	167	183	165	175	251	161	172	247	224	178
Ammonia	mg/L	-	0.05	0.03	0.12	0.04	0.06	0.06	0.07	0.03	0.03	0.04	0.17	0.03	0.03	0.02	0.05
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-	61	43.4	51.8	64.1	72.8	47.7	57.2	47.9	50.7	80.5	51.2	50.2	71.6	78.9	44.8
Chloride	mg/L	-	34.9	51.4	41	35.3	28.2	37.2	37.8	47.5	47.4	32.9	48.7	54.8	30.3	39.2	53.4
DOC	mg/L	-	8.1	9.3	8	11.2	9.4	9.9	11.1	8	7.8	8.3	8.9	8.8	8.6	9.2	11
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	0.121	0.067	**0.547**	0.068	0.173	0.107	0.092	0.075	0.076	0.071	0.235	0.161	0.055	0.088	0.187
Magnesium	mg/L	-	8.01	8.79	8.89	12	6.87	7.08	9.63	11.1	11.8	8.14	10.3	11.4	12.3	9.2	9.98
Manganese	mg/L	-	0.035	0.026	0.065	0.016	0.018	0.037	0.032	0.017	0.018	0.014	0.095	0.043	0.007	0.02	0.049
Nitrate	mg/L	-	0.55	< 0.05	0.1	< 0.05	1.96	< 0.05	0.08	< 0.05	< 0.05	2.26	0.16	0.09	0.24	1.26	0.08
Nitrite	mg/L	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
TKN	mg/L	-	0.8	0.8	0.8	0.8	0.2	0.9	0.8	0.6	0.6	0.5	1	1	0.6	0.8	1.2
Sodium	mg/L	-	17.7	30.4	23.9	20.2	13.8	22.2	18.2	21.1	22.5	14.8	24.9	20.3	14.5	20.4	26.3
Sulphate	mg/L	-	10	11	9	10	12	7	8	10	9	20	15	14	17	19	14
Phenols	mg/L	0.001	< 0.001	< 0.001	**0.002**	**0.003**	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.001	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	0.03	**0.04**	0.03	**0.06**	0.03	0.02	**0.05**	0.02	**0.04**	0.03	0.03	**0.07**	**0.04**	0.01	**0.12**	**0.1**
Potassium	mg/L	-	1.9	0.8	1.9	2.2	2.3	1.2	0.3	2.3	2.4	1.5	1.1	0.5	2.1	1.9	1.2
Aluminum	mg/L	0.075	0.07	0.03	**0.35**	0.05	0.05	0.03	0.03	0.03	0.04	0.05	0.03	0.03	0.06	0.05	0.04
Antimony	mg/L	-	0.0003	0.0001	0.0003	< 0.0001	0.0001	0.0001	0.0002	< 0.0001	0.0001	0.0001	0.0005	0.0003	0.0003	0.0004	0.0004
Arsenic	mg/L	0.1	0.0003	0.0006	0.0005	0.0004	0.0002	0.0004	0.0005	0.0003	0.0003	0.0002	0.0005	0.0005	0.0002	0.0003	0.0006
Barium	mg/L	-	0.041	0.031	0.048	0.051	0.036	0.032	0.039	0.04	0.042	0.031	0.044	0.049	0.049	0.04	0.029
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.009	0.013	0.029	0.012	0.007	0.014	0.015	0.013	0.013	0.008	0.088	0.086	0.011	0.011	0.015
Cadmium	mg/L	0.0002	< 0.000015	< 0.000015	0.000049	0.000033	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.1	0.001	< 0.001	0.003	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.002	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0006	< 0.0001	0.0002	0.0003	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001
Copper	mg/L	0.005	0.0007	0.0007	0.0029	**0.0065**	0.0012	0.0016	0.0009	0.0009	0.0008	0.0011	0.0005	0.0005	0.0003	0.0007	0.0008
Lead	mg/L	0.025	0.00033	0.0001	0.00169	0.00033	0.00016	0.00055	0.0004	0.00013	0.00017	0.00011	0.00025	0.0003	0.00008	0.00023	0.00045
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0003	0.0003	0.0003	0.0002	0.0004	0.0002	0.0002	0.0002	0.0002	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.186	0.181	0.193	0.218	0.183	0.163	0.208	0.172	0.183	0.203	0.199	0.194	0.22	0.223	0.169
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0007	0.0005	0.0014	0.0003	0.0005	0.0005	0.0007	0.0002	0.0002	0.0005	0.0007	0.0007	0.0003	0.0004	0.0007
Zinc	mg/L	0.03	0.018	0.005	**0.045**	0.014	0.018	0.008	0.006	0.006	0.005	< 0.005	0.017	0.016	< 0.005	0.006	< 0.005
Cyanide	mg/L	0.005															
Turbidity	NTU	-															
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	Scg-Up 10-Aug-21	Scg-Up 12-Oct-21	Scg-Up 26-Apr-22	Scg-Up 21-Jun-22	Scg-Up 24-Aug-22	Scg-Up 17-Oct-22	Scg-Up 24-Apr-23	Scg-Up 8-Jun-23	Scg-Up 16-Aug-23	Scg-Up 5-Oct-23	Scg-Up 25-Apr-24	Scg-Up 11-Jun-24	Scg-Up 15-Aug-24	Scg-Up (Dup) 15-Aug-24	Scg-Up 10-Oct-24
pH -Lab	pH units	6.5-8.5	8.15	7.97	7.97	8.09	7.99	8.06	8.11	7.93	7.48	8.14	8.27	7.67	7.66	7.73	8.17
Conductivity	uS/cm	-	391	376	544	381	418	466	495	444	445	508	496	444	462	467	459
BOD	mg/L	-	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	<3	<3	<3	<3	<3	<3	<3
COD	mg/L	-	40	47	44	33	26	23	21	19	26	29	35	31	34	37	27
Total Dissolved Solids	mg/L	-	217	208	286	204	214	248	260	227	234	287	271	244	255	260	250
Total Suspended Solids	mg/L	-	11	21	6	11	5	3	3	7	4	<3		4	<3	3	3
Alkalinity	mg/L	-	125	115	208	132	127	185	179	159	141	207	180	155	202	213	159
Hardness	mg/L	-	161	141	242	162	154	213	196	173	154	225	216	195	234	231	194
Ammonia	mg/L	-	0.02	0.05	0.96	0.09	0.08	0.21	0.2	0.08	0.21	0.08	0.53	0.06	<0.05	0.08	0.35
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	**0.04**	**0.12**	< 0.01	0.01	< 0.01	< 0.01	0.01	<0.01	**0.07**	<0.01	<0.01	0.02	<0.01
Calcium	mg/L	-	47.6	41.5	82.2	47.8	47.2	58.8	66.1	51.3	48	68.5	71.3	62.3	80.3	79.3	60.3
Chloride	mg/L	-	46	49.7	32.7	37.3	47.7	32.3	42.5	39	52.2	45.2	40.6	42.5	19.8	19.6	45.6
DOC	mg/L	-	9.7	6.5	8.9	12.3	7.2	7.3	5.4	5.3	7.8	2.3	7.1	9.5	13.4	11.8	9.9
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Iron	mg/L	0.3	0.151	0.101	0.106	0.09	0.183	0.059	0.07	0.133	0.087	0.089	0.127	0.079	0.06	0.058	0.05
Magnesium	mg/L	-	10.3	9.1	8.83	8	8.79	12.2	7.93	8.6	8.32	13.1	9.21	9.54	8.12	8.06	10.5
Manganese	mg/L	-	0.086	0.051	0.02	0.028	0.03	0.008	0.031	0.035	0.037	0.03	0.034	0.037	0.014	0.014	0.019
Nitrate	mg/L	-	0.05	0.09	1.79	0.36	0.09	0.08	0.97	0.1	0.12	0.11	1.14	0.19	0.1	0.11	0.09
Nitrite	mg/L	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TKN	mg/L	-	1	1.2	1.3	1	0.8	0.8	0.8	1.2	0.9	0.8	1.3	0.8	0.8	0.8	1
Sodium	mg/L	-	24.6	22.4	17.5	19	26.4	14.4	19.8	20.5	26.3	20.7	21.9	23.2	11.9	11.8	23.8
Sulphate	mg/L	-	11	14	15	10	9	17	14	11	11	11	13	11	10	10	11
Phenols	mg/L	0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus	mg/L	0.03	**0.04**	**0.05**	0.03	**0.05**	**0.04**	0.02	**0.04**	**0.08**	0.03	0.03	**0.04**	0.03	0.02	0.02	0.02
Potassium	mg/L	-	1.8	2.2	1.8	1.2	1.1	2.3	2	0.5	1.7	2.7	2.1	1	2.5	2.4	3.2
Aluminum	mg/L	0.075	0.01	0.03	0.05	0.03	0.01	0.02	0.02	0.02	0.04	0.03	**0.08**	0.03	0.03	0.03	0.03
Antimony	mg/L	-	0.0007	0.0003	0.0003	< 0.0001	0.0004	0.0004	0.0003	0.0004	0.0002	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003
Arsenic	mg/L	0.1	0.0004	0.0003	0.0002	< 0.0001	0.0004	0.0003	0.0003	0.0004	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003
Barium	mg/L	-	0.034	0.033	0.042	0.027	0.034	0.042	0.032	0.028	0.037	0.049	0.034	0.037	0.046	0.045	0.04
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	0.2	< 0.005	0.012	0.012	0.007	0.009	0.009	0.01	0.011	0.013	0.016	0.01	0.011	0.016	0.016	0.013
Cadmium	mg/L	0.0002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.1	< 0.001	0.001	< 0.001	0.001	< 0.001	< 0.001	0.002	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0006	0.0002	0.0002	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0001	< 0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002
Copper	mg/L	0.005	0.0004	0.0003	0.0007	0.0001	0.0009	0.0004	0.0004	0.0005	0.0007	0.0008	0.0008	0.0005	0.0004	0.0004	0.0003
Lead	mg/L	0.025	0.00029	0.00034	0.00016	0.00002	0.00016	0.00008	0.00012	0.0003	0.00032	0.00014	0.00033	0.00013	0.00005	0.00006	0.00007
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00007	<0.00002	<0.00002
Molybdenum	mg/L	0.04	0.0002	0.0002	0.0003	< 0.0001	0.0002	0.0002	0.0003	0.0003	0.0003	0.0001	0.0003	0.0002	0.0002	0.0002	0.0002
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0005	0.0008	0.0008	0.0006	0.0003	0.0007	<0.0002
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	0.0001	<0.0001	**0.0002**	<0.0001	<0.0001
Strontium	mg/L	-	0.184	0.15	0.242	0.162	0.187	0.214	0.185	0.176	0.168	0.247	0.2	0.206	0.234	0.229	0.197
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-	0.0006	0.0006	0.0005	< 0.0001	0.0005	0.0003	0.0005	0.0006	0.0004	0.0003	0.0005	0.0004	0.0003	0.0003	0.0004
Zinc	mg/L	0.03	0.012	0.007	< 0.005	0.005	< 0.005	0.006	0.015	< 0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	0.008
Cyanide	mg/L	0.005							< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Turbidity	NTU	-							3.5	6.4	3.8	1.9	5.4	2.5	1.2	1	1.8
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW1 27-Apr-15	SW1 10-Jun-15	SW1 17-Nov-15	SW1 20-Apr-16	SW1 24-Apr-17	SW1 25-Apr-18	SW1 24-Apr-19	SW1 30-Apr-20	SW1 20-Apr-21	SW1 26-Apr-22	SW1 24-Apr-23	SW1 8-Jun-23	SW1 16-Aug-23	SW1 5-Oct-23	SW1 25-Apr-24
pH -Lab	pH units	6.5-8.5	8.13	7.84	8.06	8.05	8.18	8.32	8.13	8.03	8.18	8.08	8.22	Dry	Dry	Dry	Dry
Conductivity	uS/cm	-	1150	929	998	1100	1110	877	894	976	982	1120	964				
BOD	mg/L	-	< 2	< 2	2	4	<3	< 3	< 3	4	< 3	< 3	< 3				
COD	mg/L	-	12	31	14	106	15	24	33	21	8	28	12				
Total Dissolved Solids	mg/L	-	601	479	614	645	570	464	471	530	555	592	522				
Total Suspended Solids	mg/L	-	< 3	26	262	352	<3	6	4	14	36	53	8				
Alkalinity	mg/L	-	329	299	334	311	278	277	270	246	298	303	320				
Hardness	mg/L	-	347	280	521	463	318	283	293	289	339	327	342				
Ammonia	mg/L	-	0.02	0.01	< 0.01	0.05	< 0.01	0.03	0.22	0.03	0.02	0.28	0.02				
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01				
Calcium	mg/L	-	125	99	190	170	108	101	105	105	123	118	115				
Chloride	mg/L	-	167	113	108	157	170	107	109	145	132	166	121				
DOC	mg/L	-	3.5	8.3	4.7	3.8	4.3	7.1	7.7	4.4	4.8	3.2	3.3				
Fluoride	mg/L	-	0.2	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1				
Iron	mg/L	0.3	0.08	**0.598**	**3.6**	**2.45**	0.023	0.093	0.081	0.238	0.075	**0.609**	0.258				
Magnesium	mg/L	-	8.42	7.97	11.6	9.15	6.45	7.52	6.49	6.41	7.61	7.86	7.58				
Manganese	mg/L	-	0.042	0.111	1.91	0.952	0.003	0.021	0.049	0.052	0.034	0.139	0.06				
Nitrate	mg/L	-	0.1	< 0.1	0.1	0.2	< 0.1	0.12	0.27	0.2	< 0.05	< 0.05	0.08				
Nitrite	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05				
TKN	mg/L	-	0.7	1.2	0.7	0.7	0.5	0.7	1.1	0.6	0.4	0.8	1				
Sodium	mg/L	-	80.3	60.7	58.7	95.4	91.8	62.1	64.3	83	89	99.4	67				
Sulphate	mg/L	-	12	10	26	14	16	8	11	14	16	9	11				
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001				
Phosphorus	mg/L	0.03	0.02	**0.09**	**0.06**	**0.12**	0.01	**0.08**	**0.07**	**0.05**	**0.07**	**0.04**	**0.05**				
Potassium	mg/L	-	10.8	8.5	14.4	9.6	9.4	11.9	13.1	9.2	7.8	8.6	7.1				
Aluminum	mg/L	0.075	0.05	**0.19**	**1.18**	**1.05**	0.04	**0.08**	0.07	0.07	**0.08**	0.07	0.03				
Antimony	mg/L	-	0.0002	0.0002	0.0002	< 0.0001	0.0001	< 0.0001	0.0003	0.0004	0.0001	0.0003	0.0002				
Arsenic	mg/L	0.1	0.0002	0.0004	0.0007	0.0007	0.0009	0.0003	0.0003	0.0004	0.0002	0.0004	0.0004				
Barium	mg/L	-	0.057	0.068	0.161	0.108	0.055	0.053	0.053	0.056	0.06	0.063	0.057				
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002				
Boron	mg/L	0.2	0.012	0.015	0.017	0.009	0.013	0.012	0.007	0.013	0.013	0.017	0.017				
Cadmium	mg/L	0.0002	< 0.00002	0.00002	0.00016	0.00012	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000038				
Chromium	mg/L	0.1	< 0.0002	0.0005	0.0014	0.001	< 0.0015	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002				
Cobalt	mg/L	0.0006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.0001	0.0003	0.0003	0.0001	0.0003	0.0002				
Copper	mg/L	0.005	0.001	0.002	**0.0054**	0.0034	0.0012	0.0012	0.0015	0.0013	0.0009	0.0013	0.0008				
Lead	mg/L	0.025	0.00005	0.00055	0.00275	0.00441	< 0.00002	0.0001	0.00006	0.0003	0.00007	0.00046	0.00026				
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002				
Molybdenum	mg/L	0.04	0.0003	0.0003	0.0002	0.0001	0.0004	0.0004	0.0005	0.0004	0.0003	0.0002	0.0002				
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01				
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001				
Silver	mg/L	0.0001	< 0.00002	< 0.00002	0.00005	< 0.00002	**0.00047**	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001				
Strontium	mg/L	-	0.337	0.294	0.474	0.416	0.273	0.264	0.246	0.255	0.302	0.321	0.295				
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005				
Vanadium	mg/L	-	0.0002	0.0004	0.0019	0.0025	0.0003	0.0003	0.0004	0.0006	0.0003	0.0006	0.0004				
Zinc	mg/L	0.03	0.005	**0.031**	**0.159**	**0.077**	< 0.005	0.019	0.011	0.022	0.019	0.008	0.009				
Cyanide	mg/L	0.005											< 0.005				
Turbidity	NTU	-											14.3				
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW1 11-Jun-24	SW1 15-Aug-24	SW1 10-Oct-24	SW2 27-Apr-15	SW2 10-Jun-15	SW2 17-Nov-15	SW2 20-Apr-16	SW2 25-May-16	SW2 8-Jun-16	SW2 24-Apr-17	SW2 22-Jun-17	SW2 24-Aug-17	SW2 17-Oct-17	SW2 25-Apr-18	SW2 28-Jun-18
pH -Lab	pH units	6.5-8.5	Dry	Dry	Dry	7.88	7.69	7.88	7.97	8.02	8.03	7.93	7.53	7.75	7.79	8.12	7.75
Conductivity	uS/cm	-				1200	1110	1090	955	949	942	861	764	923	1020	867	1010
BOD	mg/L	-				< 2	< 2	< 2	< 2	3	3	<3	<3	<3	<3	< 3	< 3
COD	mg/L	-				9	23	< 5	5	13	23	11	13	9	7	28	< 5
Total Dissolved Solids	mg/L	-				671	765	669	552	541	546	467	397	486	534	477	576
Total Suspended Solids	mg/L	-				25	330	102	17	36	30	12	<3	5	8	4	4
Alkalinity	mg/L	-				349	314	373	335	347	369	272	281	296	298	315	319
Hardness	mg/L	-				453	753	542	423	433	431	330	294	369	383	304	362
Ammonia	mg/L	-				0.04	0.03	< 0.01	0.05	0.09	0.16	0.02	< 0.01	0.09	0.06	0.02	0.17
Un-ionized Ammonia	mg/L	0.02				< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-				162	272	195	150	152	152	120	105	126	129	109	120
Chloride	mg/L	-				140	147	98.9	82	63.9	67.9	85.9	49	89.2	103	95.9	137
DOC	mg/L	-				3.3	3.9	2.9	3	3	4.1	3.7	5.4	3.1	2.7	8.2	1.9
Fluoride	mg/L	-				0.2	0.1	0.1	0.1	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1
Iron	mg/L	0.3				**0.725**	**8.91**	**3.49**	**0.432**	**1.72**	**2.09**	0.191	0.081	0.071	0.114	0.069	0.058
Magnesium	mg/L	-				11.7	17.6	13.1	11.7	12.8	12.6	9.79	9.04	12.1	14.6	7.72	15
Manganese	mg/L	-				0.22	0.535	0.663	0.105	0.54	0.625	0.03	0.087	0.105	0.119	0.011	0.061
Nitrate	mg/L	-				0.1	1.3	< 0.1	0.1	0.2	0.2	1.4	1.05	0.6	0.55	1.17	0.97
Nitrite	mg/L	-				< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
TKN	mg/L	-				0.4	1.1	0.4	0.3	0.4	0.6	0.4	0.4	0.3	0.3	0.7	0.7
Sodium	mg/L	-				94.7	86.9	64.5	53.5	44.8	47.7	48.1	43.4	55.2	65.1	53.9	78.1
Sulphate	mg/L	-				49	33	67	50	54	39	32	20	23	41	15	32
Phenols	mg/L	0.001				< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.002**	**0.004**	**0.005**	< 0.001	< 0.001
Phosphorus	mg/L	0.03				0.02	**0.23**	**0.05**	0.03	**0.05**	**0.11**	0.02	0.01	0.03	0.01	0.02	0.01
Potassium	mg/L	-				2.2	4.2	2.1	1.8	1.9	1.3	1.8	1.4	2.3	2.3	5.5	2.7
Aluminum	mg/L	0.075				0.07	**4.5**	**0.44**	**0.13**	**0.13**	**0.27**	**0.21**	0.06	**0.08**	**0.08**	**0.08**	**0.08**
Antimony	mg/L	-				< 0.0001	0.0002	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	0.0002	< 0.0001	< 0.0001	0.0002
Arsenic	mg/L	0.1				0.0002	0.001	0.0006	0.0002	0.0004	0.0003	0.0004	0.0004	0.0004	0.0006	0.0003	0.0002
Barium	mg/L	-				0.082	0.149	0.108	0.072	0.092	0.08	0.078	0.072	0.107	0.112	0.053	0.107
Beryillium	mg/L	1.1				< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2				0.02	0.035	0.024	0.011	0.033	0.022	0.015	0.024	0.032	0.035	0.016	0.03
Cadmium	mg/L	0.0002				< 0.00002	0.00008	0.00013	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000014	0.000047	< 0.000015	0.000041
Chromium	mg/L	0.1				< 0.0002	0.0049	0.0004	0.0002	0.0004	0.0003	< 0.0015	< 0.001	< 0.001	< 0.001	< 0.001	0.001
Cobalt	mg/L	0.0006				< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0001	0.0002	0.0004	0.0002	< 0.0001	0.0005
Copper	mg/L	0.005				0.0009	**0.0058**	0.0047	0.0007	0.0014	0.001	0.0011	0.0019	0.0011	**0.006**	0.0022	**0.0071**
Lead	mg/L	0.025				0.00005	0.0053	0.00077	0.00025	0.00017	0.00089	0.00006	0.00004	0.00002	0.00035	0.00006	0.00029
Mercury	mg/L	-				< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04				0.0002	0.0003	0.0001	0.0001	0.0002	< 0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0003
Nickel	mg/L	0.025				< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-				< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001				< 0.00002	0.00003	0.00005	< 0.00002	< 0.00002	< 0.00002	**0.00038**	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001
Strontium	mg/L	-				0.456	0.696	0.52	0.409	0.411	0.407	0.314	0.322	0.381	0.363	0.276	0.433
Thallium	mg/L	-				< 0.00005	0.00007	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-				< 0.0001	0.0053	0.0009	0.0003	0.0003	0.0006	0.0003	0.0001	< 0.0001	0.0001	0.0003	0.0002
Zinc	mg/L	0.03				**0.066**	**0.14**	**0.099**	0.016	0.014	0.03	**0.053**	0.01	0.015	0.012	0.007	0.015
Cyanide	mg/L	0.005															
Turbidity	NTU	-															
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary - General Water Quality

Parameter	UNITS	PWQO	SW2 22-Aug-18	SW2 9-Oct-18	SW2 24-Apr-19	SW2 17-Jul-19	SW2 13-Aug-19	SW2 30-Apr-20	SW2 24-Jun-20	SW2 22-Oct-20	SW2 20-Apr-21	SW2 15-Jun-21	SW2 20-Oct-21	SW2 26-Oct-21	SW2 26-Apr-22	SW2 21-Jun-22	SW2 24-Aug-22
pH -Lab	pH units	6.5-8.5	7.89	7.54	8.17	7.74	8.05	7.88	7.83	8.09	8.06	7.72	7.88	7.97	8.18	7.6	7.69
Conductivity	uS/cm	-	1090	1130	847	967	968	883	1140	1110	923	1260	815	1160	946	1030	1250
BOD	mg/L	-	< 2	2	< 3	< 3	< 3	< 3	6	7	< 3	< 6	3	<2	< 3	< 3	17
COD	mg/L	-	13	6	24	9	14	10	21	< 5	< 5	< 5	74	62	17	21	28
Total Dissolved Solids	mg/L	-	597	602	452	501	532	481	661	621	522	702	461	689	521	536	673
Total Suspended Solids	mg/L	-	25	< 3	3	10	24	4	160	14	16	189	37	11	38	46	50
Alkalinity	mg/L	-	294	286	307	288	280	262	267	276	293	278	329	480	334	315	286
Hardness	mg/L	-	369	417	372	387	383	367	380	421	376	420	340	580	418	389	391
Ammonia	mg/L	-	0.1	0.03	0.04	0.07	0.05	< 0.01	0.25	0.02	0.03	0.1	0.04	0.07	0.92	0.03	0.2
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02	< 0.02	0.02	< 0.01	< 0.01
Calcium	mg/L	-	131	136	130	127	130	128	183	141	130	143	150	220	150	133	130
Chloride	mg/L	-	149	149	62.1	97.4	121	97.1	180	166	107	213	39	66	78.6	115	201
DOC	mg/L	-	2.1	2.6	11.3	2.8	2.5	2.5	2	1.1	2.7	2.4	21.7	24.3	7.2	2.7	1.5
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	**0.412**	0.078	0.058	0.056	**0.609**	0.134	0.283	**1.11**	0.092	**0.784**	**1.1**	**0.5**	**0.808**	0.184	0.14
Magnesium	mg/L	-	17.1	18.7	8.89	12.8	14	11.5	16.1	16.7	12.3	15.3	10	16	10.4	13.9	16.1
Manganese	mg/L	-	0.085	0.061	0.015	0.087	0.144	0.035	0.688	0.134	0.025	0.107	0.13	0.19	0.043	0.049	0.082
Nitrate	mg/L	-	0.35	0.46	5.03	1	0.9	0.94	0.72	0.53	1.2	0.83	1.9	0.6	3.89	0.46	0.07
Nitrite	mg/L	-	< 0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.02	< 0.01	< 0.05	< 0.05	< 0.05
TKN	mg/L	-	0.4	0.3	1.1	0.3	0.2	0.2	0.7	0.4	0.3	0.4	3	1.7	1.2	0.4	6
Sodium	mg/L	-	74	81.4	40.3	60.9	58.6	51.3	86.7	82.7	55.6	156	23	39	51.6	58.1	102
Sulphate	mg/L	-	47	49	21	27	37	32	31	44	33	37	39	55	24	27	48
Phenols	mg/L	0.001	**0.006**	< 0.002	< 0.002	**0.004**	< 0.002	< 0.002	< 0.001	< 0.002	< 0.002	< 0.002	**0.005**	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	0.03	0.03	0.01	0.02	< 0.01	0.02	< 0.01	**0.04**	**0.08**	0.03	**0.08**	**0.18**	**0.035**	**0.05**	0.02	**0.28**
Potassium	mg/L	-	2.9	2.8	5.7	2.5	2.3	1.3	2.3	2.4	1.3	2.1	14	7.9	4.1	1.9	2.7
Aluminum	mg/L	0.075	**0.22**	0.07	0.06	0.07	0.06	**0.08**	0.07	0.05	**0.09**	**0.09**	**0.73**	**0.16**	0.07	0.04	0.04
Antimony	mg/L	-	< 0.0001	< 0.0001	< 0.0001	0.0004	< 0.0001	0.0004	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0005	< 0.0005	0.0003	0.0004	0.0004
Arsenic	mg/L	0.1	0.0003	0.0002	0.0003	0.0002	0.0003	0.0001	0.0003	0.0005	0.0001	0.0003	< 0.001	< 0.001	0.0004	0.0002	0.0003
Barium	mg/L	-	0.128	0.125	0.066	0.107	0.11	0.081	0.157	0.122	0.088	0.121	0.095	0.12	0.072	0.104	0.177
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.0005	< 0.0005	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.034	0.034	0.013	0.028	0.031	0.015	0.107	0.037	0.015	0.027	0.04	0.05	0.025	0.021	0.027
Cadmium	mg/L	0.0002	0.000119	< 0.000015	< 0.0000015	< 0.000015	< 0.000015	< 0.000015	< 0.0000015	< 0.000015	< 0.000015	< 0.000015	< 0.0001	< 0.0001	< 0.000015	< 0.000015	< 0.000028
Chromium	mg/L	0.1	0.001	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.001	< 0.005	< 0.005	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0006	0.0005	0.0002	0.0002	0.0002	0.0004	0.0002	0.0005	0.0005	0.0001	0.0006	**0.0007**	< 0.0005	0.0004	0.0002	0.0006
Copper	mg/L	0.005	**0.0092**	0.0008	0.0025	0.001	0.0015	0.001	0.0012	0.0012	0.0007	0.0019	0.005	0.003	0.0028	0.0012	0.0014
Lead	mg/L	0.025	0.00105	0.00004	0.00003	0.00004	0.00031	0.00005	0.00017	0.00027	0.00005	0.0005	0.0012	< 0.0005	0.00054	0.00008	0.00007
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00001	< 0.00001	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0004	0.0003	0.0006	0.0003	0.0004	0.0002	0.0002	0.0003	0.0002	0.0002	0.0015	0.0007	0.0005	0.0002	0.0003
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.002	0.001	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.485	0.485	0.328	0.414	0.406	0.346	0.48	0.491	0.376	0.454	0.37	0.59	0.41	0.432	0.495
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0001
Vanadium	mg/L	-	0.0005	0.0002	0.0005	0.0001	0.0004	0.0002	0.0003	0.0007	0.0001	0.0007	0.0018	0.0012	0.001	0.0002	0.0002
Zinc	mg/L	0.03	**0.037**	0.03	0.01	**0.032**	0.028	0.006	**0.057**	0.016	0.018	**0.035**	0.009	0.007	0.018	0.013	0.027
Cyanide	mg/L	0.005															
Turbidity	NTU	-															
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW2 17-Oct-22	SW2 24-Apr-23	SW2 8-Jun-23	SW2 16-Aug-23	SW2 5-Oct-23	SW2 25-Apr-24	SW2 11-Jun-24	SW2 15-Aug-24	SW2 10-Oct-24	SW2 10-Oct-24	SW3 28-Apr-15	SW3 10-Jun-15	SW3 17-Nov-15	SW3 20-Apr-16	SW3 16-May-16
pH -Lab	pH units	6.5-8.5	7.81	8.05	7.79	7.58	7.82	7.96	7.85	8.09	Dry	7.95	8.26	8.21	8.21	8.23	8.19
Conductivity	uS/cm	-	1120	947	1190	1060	1170	886	1110	1030		1000	854	876	971	759	850
BOD	mg/L	-	< 3	< 3	11	<3	7	<3	6	3		<3	< 2	< 2	< 2	< 2	< 2
COD	mg/L	-	11	10	566	9	64	19	54	11		9	6	7	< 5	7	6
Total Dissolved Solids	mg/L	-	659	517	634	565	672	487	611	582		583	460	467	556	429	433
Total Suspended Solids	mg/L	-	206	6	260	15	58	4	29	35		61	< 3	7	14	< 3	10
Alkalinity	mg/L	-	384	317	315	318	301	311	317	322		333	286	265	311	278	267
Hardness	mg/L	-	471	362	389	353	427	360	420	399		442	325	325	416	344	289
Ammonia	mg/L	-	0.06	0.04	1.47	0.81	0.23	0.17	0.94	0.86		0.16	< 0.01	< 0.01	0.01	0.02	0.05
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	0.02	0.01	<0.01	<0.01	<0.01	<0.01		<0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-	169	122	133	119	141	126	145	138		151	113	109	142	120	99.5
Chloride	mg/L	-	102	108	179	140	194	83.8	151	129		117	90.7	108	102	60.9	97.1
DOC	mg/L	-	1.5	3.9	8.4	2.1	0.8	3.6	3.1	2.9		3.6	3.1	3.9	2.6	3.4	2.5
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	0.2	0.1	0.1	0.2	0.1
Iron	mg/L	0.3	**6.41**	**0.317**	**0.468**	0.135	**0.375**	0.096	**0.814**	**0.818**		**0.456**	0.073	**0.616**	0.282	0.129	0.084
Magnesium	mg/L	-	13.9	9.9	14	13.6	18.3	11.2	13.8	13.2		15.6	10.3	12.7	14.9	10.5	9.86
Manganese	mg/L	-	0.908	0.049	0.07	0.049	0.109	0.045	0.076	0.129		0.094	0.012	0.161	0.016	0.01	0.01
Nitrate	mg/L	-	0.14	0.67	< 0.05	0.34	0.31	0.26	0.08	<0.05		0.08	0.4	0.4	1.5	0.8	0.4
Nitrite	mg/L	-	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	0.07		<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TKN	mg/L	-	0.4	0.7	5	0.3	4.2	0.4	1.8	1.2		0.3	0.6	0.7	0.4	0.4	0.3
Sodium	mg/L	-	53.6	55.9	84.5	67.4	95.4	47.9	79.2	74.5		67	40.3	49	58.1	37.2	41.2
Sulphate	mg/L	-	81	28	30	30	36	29	27	28		28	29	25	43	27	22
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	**0.002**		<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	0.03	0.02	**0.04**	**0.11**	0.02	**0.63**	0.02	**0.11**	**0.06**		0.02	0.01	**0.06**	**0.06**	0.01	**0.05**
Potassium	mg/L	-	1.4	3	2.1	1.8	4	1.8	2.9	4		3.4	2.3	1.3	2.3	2	1.2
Aluminum	mg/L	0.075	0.05	0.03	0.04	**0.08**	**0.09**	0.05	**0.14**	**0.12**		**0.08**	0.04	**0.24**	**0.08**	0.06	0.03
Antimony	mg/L	-	0.0007	0.0002	0.0003	0.0001	0.0003	0.0004	0.0006	0.0002		0.0003	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0004
Arsenic	mg/L	0.1	0.0007	0.0003	0.0002	0.0002	0.0006	0.0001	0.0004	0.0007		0.0004	0.0002	0.0002	0.0002	0.0002	< 0.0012
Barium	mg/L	-	0.091	0.132	0.221	0.105	0.608	0.084	0.297	0.121		0.122	0.063	0.082	0.086	0.073	0.056
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.026	0.023	0.021	0.025	0.032	0.019	0.025	0.034		0.031	0.02	0.019	0.026	0.013	< 0.005
Cadmium	mg/L	0.0002	< 0.000028	< 0.000015	< 0.000015	<0.000015	0.000032	<0.000015	<0.000015	<0.000015		<0.000015	< 0.00002	0.00002	0.00006	< 0.00002	< 0.001
Chromium	mg/L	0.1	< 0.001	0.002	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	0.0003	0.0006	0.0113	< 0.0002	< 0.0005
Cobalt	mg/L	0.0006	**0.0011**	0.0002	0.0002	0.0003	**0.0008**	0.0003	0.0005	**0.0009**		**0.001**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	0.005	0.0014	0.0015	0.0013	0.0011	0.0038	0.0009	0.0017	0.0008		0.0009	0.0008	0.0012	0.0034	0.0006	< 0.001
Lead	mg/L	0.025	0.0008	0.00007	0.00018	0.00005	0.00021	0.00005	0.00021	0.00023		0.00014	0.00028	0.00059	0.00031	0.00004	< 0.0006
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002		<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	< 0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0004	0.0002		0.0002	0.0002	0.0002	0.0002	0.0002	< 0.001
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	0.0008	0.001	0.0006	0.0008	0.0009		0.0008	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.002	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.0008
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**0.0003**		<0.0001	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.0005
Strontium	mg/L	-	0.438	0.36	0.451	0.439	0.524	0.377	0.466	0.442		0.483	0.366	0.411	0.508	0.374	0.329
Thallium	mg/L	-	< 0.0001	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005		<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0006
Vanadium	mg/L	-	0.0011	0.0003	0.0003	0.0002	0.0004	0.0001	0.0004	0.0003		0.0002	0.0001	0.0004	0.0002	0.0003	
Zinc	mg/L	0.03	0.016	**0.031**	**0.056**	0.021	**0.073**	0.02	**0.034**	0.017		0.021	0.007	0.023	< 0.005	< 0.005	< 0.005
Cyanide	mg/L	0.005		< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005					
Turbidity	NTU	-		3.6	17.6	6.8	8.8	2.3	12.9	11		29.7					
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW3 8-Jun-16	SW3 24-Apr-17	SW3 22-Jun-17	SW3 24-Aug-17	SW3 17-Oct-17	SW3 25-Apr-18	SW3 28-Jun-18	SW3 9-Oct-18	SW3 24-Apr-19	SW3 17-Jul-19	SW3 30-Apr-20	SW3 24-Jun-20	SW3 22-Oct-20	SW3 20-Apr-21	SW3 15-Jun-21
pH -Lab	pH units	6.5-8.5	8.22	8.2	8.03	8.03	8.25	8.36	8.19	8.14	8.21	8.08	8.06	7.91	8.21	8.27	8.11
Conductivity	uS/cm	-	979	817	789	882	982	793	1010	1120	842	984	780	1260	1080	837	1260
BOD	mg/L	-	4	<3	<3	<3	<3	< 3	< 3	2	< 3	< 3	< 3	22	< 3	< 3	< 3
COD	mg/L	-	11	11	12	14	9	25	< 5	6	28	40	12	12	6	< 5	16
Total Dissolved Solids	mg/L	-	526	431	424	480	531	431	571	592	447	531	434	664	597	480	720
Total Suspended Solids	mg/L	-	17	3	7	310	7	4	6	45	< 3	256	3	520	555	< 3	85
Alkalinity	mg/L	-	292	275	325	320	310	281	324	291	322	330	259	334	287	289	362
Hardness	mg/L	-	361	321	337	381	403	312	381	423	359	409	338	455	402	364	464
Ammonia	mg/L	-	0.1	< 0.01	< 0.01	0.02	0.01	0.02	0.03	0.01	0.04	0.05	< 0.01	0.03	0.02	< 0.01	0.02
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-	123	105	120	136	137	110	129	144	124	156	120	156	138	127	162
Chloride	mg/L	-	134	73.2	42.7	78.8	100	77.1	144	149	58.9	98.5	74.5	202	162	87.6	202
DOC	mg/L	-	2.6	4.5	5.8	5.6	4	6.6	3.5	3.4	10.3	6.9	3.5	3.7	1.9	3.3	4.2
Fluoride	mg/L	-	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	**0.575**	0.068	0.22	**0.574**	**0.372**	0.132	0.205	0.115	0.084	**3.99**	0.055	**0.302**	**0.411**	0.045	**0.695**
Magnesium	mg/L	-	13.1	8	10.6	12.7	14.6	9.1	14.2	15.3	8.44	12.4	9.36	15.1	13.9	11.2	14.3
Manganese	mg/L	-	0.078	0.003	0.126	0.194	0.09	0.022	0.053	0.018	0.012	1.66	0.006	0.441	0.135	0.009	0.333
Nitrate	mg/L	-	0.2	0.3	0.07	< 0.05	< 0.05	0.85	0.07	< 0.05	4.3	0.06	0.12	< 0.05	< 0.05	< 0.05	0.15
Nitrite	mg/L	-	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
TKN	mg/L	-	0.5	0.3	0.5	0.5	0.4	0.6	0.4	0.5	1.1	2.1	0.3	0.6	0.5	0.2	0.6
Sodium	mg/L	-	61.7	39.8	39.1	49.1	62.6	46.2	79.2	77	37.5	58	39.3	85.5	76.3	47.9	80.9
Sulphate	mg/L	-	16	36	15	9	28	16	9	34	20	1	29	2	28	27	2
Phenols	mg/L	0.001	< 0.001	< 0.001	**0.002**	**0.004**	**0.003**	< 0.001	< 0.001		< 0.002	< 0.002	< 0.002	< 0.001	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	0.03	0.03	< 0.01	0.01	**0.08**	0.03	0.02	0.03	**0.04**	0.01	**0.35**	< 0.01	0.03	**0.05**	**0.05**	**0.08**
Potassium	mg/L	-	0.9	2.3	1.1	2	2.8	3.9	1.2	2.5	5.2	1.9	1.9	1.4	1.9	1.6	1.3
Aluminum	mg/L	0.075	**0.08**	0.06	**0.1**	**0.18**	**0.16**	**0.09**	**0.09**	**0.08**	0.07	0.07	0.07	0.07	0.05	**0.09**	0.05
Antimony	mg/L	-	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	0.0001	< 0.0001	0.0004	< 0.0001	< 0.0001	< 0.0001	0.0001
Arsenic	mg/L	0.1	0.0002	0.0004	0.0006	0.0008	0.0008	0.0003	0.0004	0.0002	0.0003	0.0016	0.0002	0.0007	0.0003	0.0002	0.0006
Barium	mg/L	-	0.065	0.062	0.089	0.089	0.089	0.065	0.075	0.093	0.066	0.112	0.07	0.098	0.073	0.067	0.08
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.014	0.018	0.027	0.03	0.028	0.015	0.026	0.025	0.011	0.027	0.018	0.105	0.018	0.016	0.02
Cadmium	mg/L	0.0002	< 0.00002	< 0.000014	< 0.000014	0.000094	0.000048	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000039	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000021
Chromium	mg/L	0.1	0.0002	< 0.0015	< 0.001	< 0.001	0.001	< 0.001	< 0.001	0.003	0.001	0.002	< 0.001	< 0.001	0.001	< 0.001	0.001
Cobalt	mg/L	0.0006	< 0.005	< 0.0001	0.0002	0.0005	< 0.0001	< 0.0001	0.0004	0.0001	0.0001	**0.0014**	0.0002	0.0003	0.0003	< 0.0001	0.0005
Copper	mg/L	0.005	0.0004	0.0008	0.0009	**0.0067**	**0.0067**	0.0015	0.0006	0.0009	0.0026	0.0025	0.0009	0.0006	0.0007	0.0005	0.0012
Lead	mg/L	0.025	0.00019	< 0.00002	0.00007	0.00069	0.0005	0.00005	0.00006	0.00015	0.00006	0.00221	0.00005	0.00008	0.0003	< 0.00002	0.00047
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0001	0.0005	0.0007	0.0007	0.0003	0.0004	0.0002	0.0004	0.0005	0.0005	0.0004	0.001	0.0004	0.0002	0.0006
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.00002	**0.00037**	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.4	0.285	0.379	0.398	0.378	0.304	0.422	0.418	0.311	0.428	0.303	0.455	0.374	0.353	0.457
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0003	0.0004	0.0003	0.0003	0.0003	0.0002	0.0003	0.0005	0.0004	0.0025	0.0004	0.0003	0.0007	0.0002	0.0009
Zinc	mg/L	0.03	< 0.005	< 0.005	0.024	**0.044**	**0.19**	0.017	0.022	0.02	0.007	**0.033**	< 0.005	0.014	< 0.005	0.014	0.019
Cyanide	mg/L	0.005															
Turbidity	NTU	-															
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW3 11-Aug-21	SW3 15-Oct-21	SW3 26-Apr-22	SW3 21-Jun-22	SW3 17-Oct-22	SW3 24-Apr-23	SW3 8-Jun-23	SW3 16-Aug-23	SW3 5-Oct-23	SW3 25-Apr-24	SW3 11-Jun-24	SW3 15-Aug-24	SW3 10-Oct-24	SW4 27-Apr-15	SW4 11-Jun-15
pH -Lab	pH units	6.5-8.5	8.23	8.21	8.23	8.18	8.01	8.19	Dry	8.13	8.21	8.21	Dry	8.23	8.17	8.12	8.14
Conductivity	uS/cm	-	1050	1030	858	891	1190	851		1010	1020	795		944	903	569	756
BOD	mg/L	-	3	4	< 3	< 3	< 3	< 3		<3	<3	<3		<3	<3	< 2	< 2
COD	mg/L	-	19	20	45	16	48	14		16	<5	20		100	16	< 5	13
Total Dissolved Solids	mg/L	-	558	576	462	472	628	465		549	599	435		531	538	317	401
Total Suspended Solids	mg/L	-	380	570	4	65	62	3		31	<3	3		14	64	58	5
Alkalinity	mg/L	-	373	353	316	319	297	315		338	298	310		332	320	292	312
Hardness	mg/L	-	372	410	358	375	390	322		364	395	316		384	418	308	305
Ammonia	mg/L	-	0.15	0.04	0.66	0.03	0.05	0.09		0.21	0.35	0.16		0.26	0.18	< 0.01	< 0.01
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01		**0.03**	0.01	<0.01		0.01	<0.01	< 0.01	< 0.01
Calcium	mg/L	-	128	141	128	131	119	116		126	133	112		134	145	113	109
Chloride	mg/L	-	128	131	66.1	85.1	199	82.2		132	166	67.3		113	106	6.8	45.4
DOC	mg/L	-	4.7	4.1	7	4.9	0.6	4.6		3.3	2.9	4.2		4.1	4.5	5.5	8.2
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		<0.1	<0.1	<0.1		<0.1	<0.1	0.2	0.1
Iron	mg/L	0.3	**0.509**	**1.08**	0.164	0.239	**1.27**	0.252		**0.766**	0.138	0.143		**0.578**	**3.32**	0.045	0.082
Magnesium	mg/L	-	12.9	14.1	9.31	11.4	13.9	8.99		12	15	8.78		12.2	13.4	6.3	7.67
Manganese	mg/L	-	0.293	0.434	0.024	0.083	0.227	0.025		0.239	0.059	0.033		0.157	0.702	0.015	0.037
Nitrate	mg/L	-	0.14	< 0.05	2.66	< 0.05	0.1	0.34		0.06	0.06	<0.05		<0.05	<0.05	< 0.1	2
Nitrite	mg/L	-	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05		<0.05	<0.05	<0.05		0.06	<0.05	< 0.1	< 0.1
TKN	mg/L	-	0.7	0.5	1.2	0.4	1.4	0.6		0.4	0.7	0.4		0.6	0.6	0.2	1
Sodium	mg/L	-	60.7	65.3	44.3	48.4	87.4	45.1		65.1	76.1	40.1		62.8	61	5.3	28.7
Sulphate	mg/L	-	2	8	20	9	26	21		8	26	18		5	13	10	13
Phenols	mg/L	0.001	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001		<0.001	<0.001	<0.001		**0.002**	<0.001	< 0.001	< 0.001
Phosphorus	mg/L	0.03	0.03	**0.06**	0.01	0.02	**0.19**	0.03		0.03	<0.01	0.02		0.02	**0.04**	< 0.01	0.03
Potassium	mg/L	-	1.7	2.6	3.6	1.5	2.5	2.7		2	2.6	2.2		2.6	3.4	0.7	0.5
Aluminum	mg/L	0.075	0.04	0.04	0.07	0.04	0.04	0.03		**0.2**	0.05	0.06		**0.08**	**0.35**	0.04	0.05
Antimony	mg/L	-	0.0004	0.0004	0.0003	0.0005	0.0003	0.0003		<0.0001	0.0004	0.0003		0.0004	0.0003	0.0001	0.0002
Arsenic	mg/L	0.1	0.0007	0.0007	0.0003	0.0003	0.0005	0.0003		0.0006	0.0002	0.0002		0.0004	0.0007	0.0002	0.0003
Barium	mg/L	-	0.052	0.079	0.062	0.062	0.068	0.061		0.068	0.062	0.047		0.063	0.075	0.029	0.033
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	< 0.002	< 0.002
Boron	mg/L	0.2	0.026	0.027	0.021	0.023	0.022	0.019		0.025	0.025	0.017		0.027	0.023	0.008	0.005
Cadmium	mg/L	0.0002	< 0.000015	< 0.000015	0.000029	< 0.000015	< 0.000028	< 0.000015		<0.000015	<0.000015	<0.000015		<0.000015	0.000015	< 0.00002	0.00002
Chromium	mg/L	0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002		<0.001	<0.001	<0.001		<0.001	<0.001	< 0.0002	0.0004
Cobalt	mg/L	0.0006	0.0006	0.0005	0.0002	0.0002	0.0005	0.0002		0.0005	0.0004	0.0002		0.0003	**0.0007**	< 0.005	< 0.005
Copper	mg/L	0.005	0.0004	0.0006	0.0021	0.0004	0.0008	0.001		0.0007	0.0004	0.0007		0.0009	0.0008	0.0003	0.0012
Lead	mg/L	0.025	0.00016	0.00048	0.00014	0.00006	0.00068	0.00007		0.00032	0.00006	0.00007		0.00023	0.00084	< 0.00002	0.00044
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002		<0.00002	<0.00002	<0.00002		<0.00002	<0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0004	0.0002	0.0004	0.0002	< 0.0002	0.0003		0.0002	0.0001	0.0002		0.0001	<0.0001	0.0001	0.0002
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		0.0009	0.0041	0.0004		0.0005	0.0008	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001		<0.001	<0.001	<0.001		<0.001	<0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	**0.0002**	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001		<0.0001	<0.0001	<0.0001		**0.0003**	<0.0001	< 0.00002	< 0.00002
Strontium	mg/L	-	0.406	0.444	0.357	0.376	0.4	0.331		0.39	0.402	0.295		0.388	0.392	0.303	0.309
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0001	< 0.00005		<0.00005	<0.00005	<0.00005		<0.00005	<0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0004	0.0008	0.0003	0.0002	0.0007	0.0002		0.0005	0.0001	0.0002		0.0002	0.0009	0.0002	0.0004
Zinc	mg/L	0.03	0.014	0.005	0.009	< 0.005	0.007	0.028		0.006	0.013	0.008		<0.005	0.009	< 0.005	< 0.005
Cyanide	mg/L	0.005						< 0.005		<0.005	<0.005	<0.005		<0.005	<0.005	< 0.005	< 0.005
Turbidity	NTU	-						10.4		6.9	2.1	3.3		4.6	7.3	10.2	11.5
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW4 17-Nov-15	SW4 20-Apr-16	SW4 25-May-16	SW4 8-Jun-16	SW4 24-Apr-17	SW4 22-Jun-17	SW4 24-Aug-17	SW4 17-Oct-17	SW4 25-Apr-18	SW4 24-Apr-19	SW4 31-Oct-19	SW4 30-Apr-20	SW4 20-Apr-21	SW4 15-Oct-21	SW4 26-Apr-22
pH -Lab	pH units	6.5-8.5	8.16	8.21	8.16	8.11	8.12	7.83	8	8.24	8.31	8.19	8.01	8.17	8.24	8.16	8.33
Conductivity	uS/cm	-	800	618	813	1180	501	653	643	720	508	557	447	550	575	720	638
BOD	mg/L	-	< 2	3	< 2	< 2	<3	<3	5	<3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
COD	mg/L	-	< 5	11	17	21	8	6	15	9	18	19	22	14	7	31	6
Total Dissolved Solids	mg/L	-	458	347	438	639	269	350	363	407	269	293	247	304	328	415	342
Total Suspended Solids	mg/L	-	8	5	17	22	3	6	22	<3	5	12	< 3	< 3	< 3	6	< 3
Alkalinity	mg/L	-	256	249	327	385	251	346	328	366	232	230	132	225	264	326	268
Hardness	mg/L	-	339	299	362	433	261	347	404	409	246	282	195	265	290	360	300
Ammonia	mg/L	-	0.01	0.03	0.06	0.06	< 0.01	< 0.01	0.02	0.01	0.02	0.04	0.15	< 0.01	0.01	0.05	0.12
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-	123	109	130	153	93.3	123	135	149	88.6	101	69.1	96.7	106	129	108
Chloride	mg/L	-	55.8	34.2	52.5	148	6.6	3.7	7.5	8.8	12.7	19.2	16.2	24.2	19.5	39	29.6
DOC	mg/L	-	4.2	4.2	5.3	5.2	4.1	4.2	5.4	3.5	5.7	6.5	8.4	6.4	5.7	10.8	6.9
Fluoride	mg/L	-	0.1	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	0.15	0.047	**0.569**	**1.14**	0.024	0.067	0.128	0.079	0.056	0.04	< 0.005	0.056	0.049	0.156	0.029
Magnesium	mg/L	-	7.5	6.67	8.78	12.3	4.85	6.55	7.95	8.79	5.86	5.25	5.31	5.71	6.13	9.1	7.2
Manganese	mg/L	-	0.048	0.019	0.375	0.87	0.004	0.065	0.036	0.025	0.01	0.004	0.004	0.02	0.013	0.022	0.003
Nitrate	mg/L	-	6.8	1.6	0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	1.32	2.65	< 0.05	0.85	0.69	< 0.05	1.89
Nitrite	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
TKN	mg/L	-	0.7	0.4	0.6	0.7	0.2	0.4	0.4	0.2	0.4	0.6	0.6	0.5	0.3	0.8	0.5
Sodium	mg/L	-	36.6	23.1	34.7	78.7	3.8	4.6	5	5.8	10.5	10.6	6	15.2	13	22.9	18.6
Sulphate	mg/L	-	49	16	13	13	9	4	9	14	10	17	60	17	15	17	15
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	**0.004**	**0.004**	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001
Phosphorus	mg/L	0.03	**0.06**	0.01	0.03	**0.05**	< 0.01	0.02	**0.04**	0.02	0.02	0.01	0.03	0.02	**0.04**	**0.05**	0.01
Potassium	mg/L	-	1.5	1.8	0.5	0.4	0.6	0.6	1.3	1.3	1.5	1.8	4.8	1.5	1.2	1.9	2.1
Aluminum	mg/L	0.075	0.06	0.04	**0.1**	**0.16**	0.05	0.06	**0.12**	**0.12**	**0.08**	0.05	0.05	0.06	0.07	0.04	0.07
Antimony	mg/L	-	0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0002	0.0005	0.0001	< 0.0001	0.0003	0.0004	0.0004	< 0.0001	0.0003	0.0003
Arsenic	mg/L	0.1	0.0002	0.0002	0.0005	0.0005	0.0001	0.0003	0.0004	0.0002	0.0004	0.0002	0.0003	0.0002	0.0001	0.0004	0.0002
Barium	mg/L	-	0.045	0.037	0.053	0.057	0.024	0.035	0.039	0.048	0.037	0.037	0.021	0.035	0.034	0.051	0.042
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.007	< 0.005	0.024	0.013	0.006	0.016	0.022	0.017	0.007	0.006	0.007	0.011	0.009	0.022	0.014
Cadmium	mg/L	0.0002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	0.00012	0.000041	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.1	0.0003	0.0003	0.0003	0.0003	< 0.0015	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.0001	0.0003	< 0.0001	< 0.0001	0.0001	0.0003	0.0001	< 0.0001	0.0002	0.0001
Copper	mg/L	0.005	0.0008	0.0005	0.001	0.0006	< 0.0001	0.0004	**0.0103**	**0.0056**	0.0005	0.0008	0.0015	0.0007	0.0006	0.0006	0.0008
Lead	mg/L	0.025	0.00011	< 0.00002	< 0.00002	0.00023	< 0.00002	0.00002	0.00059	0.00039	0.00005	0.00003	0.00003	0.00006	0.00003	0.00009	0.00017
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0002	0.0001	0.0002	0.0002	0.0001	0.0001	0.0003	0.0001	0.0001	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	**0.00026**	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.332	0.288	0.359	0.439	0.232	0.341	0.347	0.352	0.225	0.234	0.17	0.228	0.261	0.359	0.307
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.000005	< 0.000005	< 0.000005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0003	0.0002	0.0006	0.0005	0.0002	0.0002	0.0005	0.0004	0.0003	0.0004	0.0004	0.0004	0.0003	0.0005	0.0004
Zinc	mg/L	0.03	< 0.005	< 0.005	< 0.005	< 0.005	**0.091**	0.014	0.027	0.016	0.024	0.006	0.012	< 0.005	0.014	< 0.005	< 0.005
Cyanide	mg/L	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
Turbidity	NTU	-	7.5	40.7	9.6	26.9	3.1	0.9	4.7	1.2	357	74.8	1.5	3.4	4.3	5.4	
Tannins & Lignins	mg/L	-								0.6			0.7				

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW4 21-Jun-22	SW4 24-Apr-23	SW4 16-Aug-23	SW4 5-Oct-23	SW4 25-Apr-24	SW4 11-Jun-24	SW4 15-Aug-24	SW4 10-Oct-24	SW13 28-Apr-15	SW13 11-Jun-15	SW13 18-Nov-15	SW13 21-Apr-16	SW13 26-May-16	SW13 8-Jun-16	SW13 11-Oct-16
pH -Lab	pH units	6.5-8.5	8.25	8.23	8.18	8.15	8.25	8.24	Dry	8.19	7.84	7.86	7.76	7.87	7.86	7.9	8.18
Conductivity	uS/cm	-	774	608	837	854	636	751		833	1600	1310	1280	1490	1430	1360	1200
BOD	mg/L	-	< 3	< 3	<3	<3	<3	3		<3	3	< 2	7	5	27	32.4	6
COD	mg/L	-	18	11	24	23	17	18		15	25	14	29	23	1720	2780	69
Total Dissolved Solids	mg/L	-	406	322	494	520	364	423		483	889	665	702	806	772	764	647
Total Suspended Solids	mg/L	-	3	4	4	10	6	25		<3	30	32	134	10	670	4600	88
Alkalinity	mg/L	-	290	267	347	363	293	305		406	214	190	172	224	221	222	191
Hardness	mg/L	-	324	292	414	445	321	353		438	392	280	324	390	365	382	242
Ammonia	mg/L	-	0.12	0.35	0.24	0.62	<0.05	0.07		0.21	0.43	0.03	0.09	1.23	0.29	0.28	0.29
Un-ionized Ammonia	mg/L	0.02	< 0.01	**0.03**	0.01	<0.01	<0.01	<0.01		<0.01	< 0.01	< 0.01	< 0.01	**0.05**	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-	117	92.8	149	160	117	128		156	133	92.3	106	130	119	125	70.8
Chloride	mg/L	-	51.2	31.7	60.2	64.8	24.3	51.7		35.1	325	228	216	272	265	231	180
DOC	mg/L	-	7.2	4	6.6	8.2	5	5.4		7.4	2.2	3.4	3.3	3.2	3	4.1	4.6
Fluoride	mg/L	-	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1		<0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Iron	mg/L	0.3	0.029	0.058	0.134	0.082	0.039	0.224		0.152	0.233	0.039	**0.688**	**0.789**	**0.585**	**2.92**	0.077
Magnesium	mg/L	-	7.92	5.92	10.1	10.9	7.23	8.23		11.9	14.2	11.9	14.2	15.7	16.6	16.6	15.7
Manganese	mg/L	-	0.006	0.012	0.038	0.02	0.013	0.085		0.034	0.046	0.016	0.054	0.2	0.141	0.171	0.034
Nitrate	mg/L	-	4.24	1.22	0.54	<0.05	2.14	1.2		<0.05	8.9	9.2	14.6	3.4	3.4	0.2	7.5
Nitrite	mg/L	-	< 0.05	< 0.05	<0.05	<0.05	<0.05	<0.05		<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TKN	mg/L	-	0.8	1	0.7	0.7	0.4	0.6		0.6	1.9	1.2	1.8	9.8	5.7	23.1	1.7
Sodium	mg/L	-	20.9	16	37.8	31.2	16.5	30.2		23.6	181	118	126	170	159	153	124
Sulphate	mg/L	-	17	14	23	33	12	15		10	58	53	60	56	52	88	95
Phenols	mg/L	0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001		<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.009**
Phosphorus	mg/L	0.03	0.03	0.02	0.02	0.03	0.02	**0.04**		0.01	**0.18**	**0.07**	**0.23**	**1.84**	**1.15**	**2.82**	**0.05**
Potassium	mg/L	-	1.5	1.7	2.8	2.1	1.5	1.3		2.4	9.4	7.4	10.9	11	12.7	12	13.7
Aluminum	mg/L	0.075	0.03	0.03	**0.14**	**0.08**	0.06	**0.14**		0.06	**7.33**	**1.12**	**6.29**	**25.5**	**14.8**	**68.1**	**0.28**
Antimony	mg/L	-	0.0004	0.0002	0.0002	0.0004	0.0002	0.0005		0.0002	0.0002	0.0004	0.0003	0.0002	0.0002	0.0001	0.0003
Arsenic	mg/L	0.1	0.0003	0.0002	0.0004	0.0003	0.0002	0.0004		0.0003	0.0003	0.0002	0.0005	0.0006	0.0006	0.001	0.0004
Barium	mg/L	-	0.045	0.035	0.067	0.063	0.035	0.043		0.051	0.1	0.04	0.076	0.173	0.112	0.304	0.035
Beryillium	mg/L	1.1	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.017	0.012	0.027	0.018	0.01	0.009		0.018	0.085	0.072	0.107	0.086	0.138	0.152	0.121
Cadmium	mg/L	0.0002	< 0.000015	< 0.000015	<0.000015	<0.000015	<0.000015	<0.000015		<0.000015	0.00005	0.00005	0.00009	0.00014	0.00006	**0.00035**	0.00003
Chromium	mg/L	0.1	< 0.001	0.002	<0.001	<0.001	<0.001	<0.001		<0.001	0.0005	0.0005	0.0015	0.0031	0.0038	0.0136	< 0.0002
Cobalt	mg/L	0.0006	0.0002	0.0001	0.0004	0.0004	0.0002	0.0005		0.0004	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001
Copper	mg/L	0.005	0.0007	0.0007	0.0011	0.0008	0.0007	0.0008		0.0005	**0.0094**	**0.0056**	**0.0086**	**0.0219**	**0.0133**	**0.0101**	0.0018
Lead	mg/L	0.025	0.00004	0.00007	0.00015	0.00006	0.00004	0.00016		0.00003	0.00103	0.00107	0.00152	0.00291	0.00239	0.0116	0.00055
Mercury	mg/L	-	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002		<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00019	< 0.00002
Molybdenum	mg/L	0.04	0.0002	0.0001	0.0003	0.0001	0.0001	0.0001		0.0001	0.0004	0.0013	0.0007	0.0005	0.0003	0.0002	0.0008
Nickel	mg/L	0.025	< 0.01	< 0.01	0.001	0.0005	0.0003	0.0005		0.0005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001		<0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	-	0.317	0.252	0.418	0.397	0.291	0.34		0.413	0.438	0.302	0.403	0.511	0.459	0.804	0.254
Thallium	mg/L	-	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005		<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0006	0.0004	0.0007	0.0005	0.0003	0.0006		0.0003	0.0003	0.0002	0.0009	0.0012	0.0014	0.0054	0.0002
Zinc	mg/L	0.03	< 0.005	< 0.005	0.007	0.006	0.007	<0.005		0.005	**0.045**	**0.032**	**0.098**	**0.081**	**0.075**	**0.196**	**0.033**
Cyanide	mg/L	0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005		<0.005							
Turbidity	NTU	-		3.5	3.7	22.2	1.9	4.4		1.3							
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW13 24-Apr-17	SW13 22-Jun-17	SW13 24-Aug-17	SW13 17-Oct-17	SW13 25-Apr-18	SW13 28-Jun-18	SW13 22-Aug-18	SW13 11-Oct-18	SW13 24-Apr-19	SW13 17-Jul-19	SW13 13-Aug-19	SW13 16-Oct-19	SW13 30-Apr-20	SW13 20-Apr-21	SW13 26-Apr-22
pH -Lab	pH units	6.5-8.5	8.12	7.74	7.46	7.67	8.11	7.98	7.73	7.89	7.98	7.77	8.26	7.98	7.86	8.06	7.78
Conductivity	uS/cm	-	470	597	472	635	520	1370	964	739	474	1350	839	594	1460	621	685
BOD	mg/L	-	<3	5	9	<3	< 3	5	17	103	4	13	< 3	< 3	8	16	38
COD	mg/L	-	21	106	274	2460	27	44	559	554	200	183	38	47	48	107	74
Total Dissolved Solids	mg/L	-	250	336	356	1145	283	757	530	406	239	681	463	340	839	348	357
Total Suspended Solids	mg/L	-	31	114	330	3700	28	10	1010	3700	4	105	9	38	36	270	90
Alkalinity	mg/L	-	228	298	313	275	216	257	236	288	210	229	271	169	231	289	249
Hardness	mg/L	-	233	291	291	376	233	281	265	320	229	306	317	197	351	337	249
Ammonia	mg/L	-	0.09	0.12	0.67	0.41	0.03	15.8	0.17	0.2	0.04	1.96	0.17	0.08	0.56	0.16	0.38
Un-ionized Ammonia	mg/L	0.02	< 0.01	0.01	< 0.01	< 0.01	< 0.01	**0.4**	< 0.01	< 0.01	< 0.01	**0.07**	< 0.01	< 0.01	< 0.01	0.01	< 0.01
Calcium	mg/L	-	81.6	118	109	753	82.7	88.8	101	127	80.2	101	110	87.9	117	121	86.6
Chloride	mg/L	-	8.2	11.3	14.4	29.2	27.4	239	146	55.9	13.1	202	99.1	62.2	314	25.6	58.4
DOC	mg/L	-	7.1	10	20.9	11.5	5.9	7	17.8	42	8.1	9	10.2	13.6	4	15.9	8.4
Fluoride	mg/L	-	0.1	0.1	0.1	0.1	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	**0.337**	**3.04**	**11**	**97.4**	0.089	0.128	**1.15**	**6.91**	0.191	**0.874**	**0.94**	**0.634**	0.121	**2.1**	0.137
Magnesium	mg/L	-	4.32	7.95	8.1	30.1	6.49	14.4	11	11.6	5	13.2	10.3	15	14.3	8.33	7.94
Manganese	mg/L	-	0.134	0.69	1.43	23.1	0.023	0.098	0.704	6.49	0.26	0.164	1.04	0.335	0.04	0.632	0.12
Nitrate	mg/L	-	0.3	0.08	0.21	0.19	< 0.05	0.44	< 0.05	< 0.05	< 0.05	0.67	0.22	2.4	2.67	< 0.05	0.43
Nitrite	mg/L	-	< 0.1	< 0.05	0.1	< 0.05	< 0.05	0.27	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	0.3	< 0.05	0.06
TKN	mg/L	-	1.9	6.8	6.8	43.7	0.7	20.2	22.7	11.4	0.9	9.5	1.1	1.3	2.5	3	1.8
Sodium	mg/L	-	8.4	14.4	16.1	26.7	22.3	159	88.9	29.5	9	158	56.8	55.3	168	19.6	46.7
Sulphate	mg/L	-	9	1	4	9	12	68	34	7	5	51	18	13	52	5	5
Phenols	mg/L	0.001	< 0.001	**0.005**	**0.011**	**0.007**	< 0.001	< 0.001	**0.005**	**0.019**	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001
Phosphorus	mg/L	0.03	**0.19**	**0.95**	**1.48**	**3.5**	**0.07**	**0.14**	**3.05**	**1.84**	**0.1**	**1.48**	**0.05**	< 0.01	**0.23**	**0.43**	**0.19**
Potassium	mg/L	-	0.4	0.4	2.8	10.9	1.8	12.9	5.4	9.1	0.7	14.8	3.7	4.6	15.1	1.8	2.3
Aluminum	mg/L	0.075	**0.09**	**0.24**	**0.9**	**37.1**	0.06	**0.56**	**1.03**	**0.31**	0.03	0.07	0.06	0.05	**0.13**	0.07	0.06
Antimony	mg/L	-	< 0.0001	0.0004	0.0002	0.0008	< 0.0001	0.0002	0.0002	0.0001	0.0001	0.0002	< 0.0001	< 0.0001	0.0004	0.0003	0.0004
Arsenic	mg/L	0.1	0.0003	0.0004	0.0014	0.0118	0.0002	0.0004	0.0005	0.001	0.0001	0.0007	0.0007	0.0005	0.0002	0.0003	0.0002
Barium	mg/L	-	0.015	0.053	0.092	1.18	0.027	0.065	0.08	0.123	0.02	0.301	0.038	0.033	0.054	0.041	0.03
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.015	0.025	0.045	**0.514**	0.02	0.136	0.107	0.052	0.015	0.16	0.057	0.103	0.11	0.02	0.046
Cadmium	mg/L	0.0002	< 0.000014	0.000027	0.000142	**0.00322**	0.000038	0.000052	0.000172	0.000086	< 0.000015	0.000108	< 0.000015	0.00002	0.000045	0.000015	< 0.000015
Chromium	mg/L	0.1	< 0.0015	< 0.001	0.004	0.076	< 0.001	0.001	0.002	0.001	< 0.001	0.008	< 0.001	0.001	< 0.001	0.001	< 0.001
Cobalt	mg/L	0.0006	< 0.0001	0.0002	**0.0011**	**0.0119**	< 0.0001	0.0004	**0.0008**	0.0006	< 0.0001	0.0004	0.0003	0.0005	0.0002	0.0003	0.0002
Copper	mg/L	0.005	< 0.0001	0.0011	**0.0128**	**0.0764**	**0.0061**	**0.0084**	**0.0138**	**0.0085**	0.001	**0.0177**	0.0007	0.0014	0.0034	0.0014	0.0007
Lead	mg/L	0.025	0.00007	0.00076	0.0028	**0.141**	0.00121	0.00064	0.00215	0.00168	0.00019	0.00506	0.00021	0.00031	0.0008	0.00042	0.00007
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	0.0002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0002	0.0001	0.0005	0.0029	0.0002	0.0018	0.0009	0.0001	0.0001	0.0031	0.0003	0.0002	0.0009	0.0001	0.0003
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	**0.12**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	**0.00046**	< 0.00002	< 0.00002	**0.00041**	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	**0.0004**	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.18	0.309	0.263	1.3	0.195	0.307	0.318	0.326	0.172	0.395	0.32	0.364	0.335	0.269	0.236
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	0.0004	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0004	0.0005	0.0021	0.0447	0.0001	0.0004	0.0019	0.0008	0.0001	0.0026	0.0003	0.0006	0.0004	0.0005	0.0003
Zinc	mg/L	0.03	**0.186**	**0.035**	**0.065**	**0.762**	0.019	**0.038**	**0.055**	0.027	0.007	**0.083**	0.01	0.014	**0.036**	0.02	< 0.005
Cyanide	mg/L	0.005															
Turbidity	NTU	-															
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW13 21-Jun-22	SW13 24-Apr-23	SW13 8-Jun-23	SW13 16-Aug-23	SW13 5-Oct-23	SW13 25-Apr-24	SW13 11-Jun-24	SW13 15-Aug-24	SW13 10-Oct-24	SW14 28-Apr-15	SW14 8-Jun-15	SW14 11-Jun-15	SW14 15-Jul-15	SW14 17-Nov-15	SW14 21-Apr-16
pH -Lab	pH units	6.5-8.5	7.79	8.08	Dry	Dry	Dry	Dry	Dry	Dry	Dry	8.25	8.17	8.12	8.06	8.12	8.2
Conductivity	uS/cm	-	1640	1520								635	685	728	769	735	651
BOD	mg/L	-	18	< 3								< 2	< 3	< 2	< 3	2	< 2
COD	mg/L	-	173	17								19	29	16	26	6	9
Total Dissolved Solids	mg/L	-	815	781								333	367	375	422	420	363
Total Suspended Solids	mg/L	-	60	4								3	3	10	15	7	< 3
Alkalinity	mg/L	-	286	218								241	270	286	292	224	239
Hardness	mg/L	-	354	317								244	292	269	349	309	289
Ammonia	mg/L	-	9.23	0.15								0.01	0.06	< 0.01	0.09	< 0.01	0.09
Un-ionized Ammonia	mg/L	0.02	**0.09**	< 0.01								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-	118	101								86.6	105	95.9	124	110	104
Chloride	mg/L	-	262	309								48	46.4	54.2	59.6	63.8	51.9
DOC	mg/L	-	5.8	2.1								5.1	9.4	8.1	5	6.3	6.1
Fluoride	mg/L	-	< 0.1	< 1								0.2	0.1	0.1	< 0.1	0.1	0.1
Iron	mg/L	0.3	**0.61**	0.029								0.159	0.16	0.096	**2.61**	0.248	0.047
Magnesium	mg/L	-	14.4	12.5								6.72	7.32	7.13	9.3	8.21	7.32
Manganese	mg/L	-	0.402	0.007								0.047	0.03	0.039	0.9	0.036	0.028
Nitrate	mg/L	-	0.96	9.09								1.7	0.5	1.2	0.7	3.1	1
Nitrite	mg/L	-	< 0.05	< 0.5								< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TKN	mg/L	-	18.5	1.1								0.6	0.7	0.9	1.2	0.8	0.5
Sodium	mg/L	-	169	164								23.2	32.1	29.6	36.9	40.1	32.6
Sulphate	mg/L	-	50	54								14	10	11	8	45	16
Phenols	mg/L	0.001	< 0.001	< 0.001								< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	0.03	**0.79**	**0.07**								0.02	0.02	**0.04**	**0.12**	**0.06**	0.01
Potassium	mg/L	-	9.8	9.7								2.6	1.5	0.5	1.9	3.8	2.7
Aluminum	mg/L	0.075	**0.1**	**0.11**								**0.08**	**0.12**	0.07	**1.17**	**0.17**	0.04
Antimony	mg/L	-	0.0004	0.0005								0.0002	0.0001	0.0002	0.0002	< 0.0001	< 0.0001
Arsenic	mg/L	0.1	0.0004	< 0.0002								0.0003	0.0005	0.0003	0.0007	0.0003	0.0002
Barium	mg/L	-	0.089	0.054								0.04	0.033	0.028	0.07	0.045	0.034
Beryillium	mg/L	1.1	< 0.002	< 0.002								< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.141	0.162								0.011	0.019	0.01	0.024	0.02	0.006
Cadmium	mg/L	0.0002	0.000045	< 0.000028								0.00006	< 0.00002	< 0.00002	0.00016	< 0.00002	< 0.00002
Chromium	mg/L	0.1	0.004	0.002								0.0002	0.0002	< 0.0002	0.0013	< 0.0002	0.0002
Cobalt	mg/L	0.0006	0.0005	0.0002								< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	0.005	**0.007**	**0.0057**								0.0007	0.0009	0.0001	0.0029	0.0007	0.0005
Lead	mg/L	0.025	0.00144	0.00044								0.00008	< 0.00002	< 0.00002	0.00125	0.0001	< 0.00002
Mercury	mg/L	-	< 0.00002	< 0.00002								< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0019	0.0013								0.0007	0.0002	0.0001	0.0001	0.0002	0.0002
Nickel	mg/L	0.025	< 0.01	< 0.01								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.002								< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	0.0001	< 0.0001								0.00002	< 0.00002	< 0.00002	0.00006	< 0.00002	< 0.00002
Strontium	mg/L	-	0.391	0.345								0.259	0.303	0.27	0.384	0.32	0.293
Thallium	mg/L	-	< 0.00005	< 0.0001								0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0008	0.0003								0.0002	0.0005	0.0004	0.0019	0.0004	0.0002
Zinc	mg/L	0.03	0.028	0.027								0.02	< 0.005	< 0.005	**0.2**	**0.044**	< 0.005
Cyanide	mg/L	0.005		< 0.005													
Turbidity	NTU	-		1.8													
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW14 26-May-16	SW14 8-Jun-16	SW14 24-Apr-17	SW14 23-May-17	SW14 22-Jun-17	SW14 24-Aug-17	SW14 17-Oct-17	SW14 25-Apr-18	SW14 28-Jun-18	SW14 17-Jul-18	SW14 22-Aug-18	SW14 11-Oct-18	SW14 24-Apr-19	SW14 5-Jun-19	SW14 17-Jul-19
pH -Lab	pH units	6.5-8.5	7.75	7.82	8.21	7.95	7.91	7.92	8.12	8.24	8.05	7.3	7.68	7.93	8.07	8.15	7.87
Conductivity	uS/cm	-	1190	1110	683	532	537	498	783	438	457		722	871	449		938
BOD	mg/L	-	26	>18	<3	<3	<3	<3	17	< 3	< 3		8	10	4		8
COD	mg/L	-	88	389	26	25	33	32	23	16	34		65	61	30		44
Total Dissolved Solids	mg/L	-	685	752	358	262	284	252	415	233	250		377	460	229		494
Total Suspended Solids	mg/L	-	260	3000	6	104	4	6	6	5	16		30	20	16		85
Alkalinity	mg/L	-	479	444	202	212	216	190	296	175	155		188	212	168		281
Hardness	mg/L	-	518	725	233	206	225	210	332	190	180		193	253	202		370
Ammonia	mg/L	-	0.65	1.97	0.03	0.11	0.02	0.04	0.06	0.03	0.11	0.09	0.54	0.05	0.04	0.02	1.02
Un-ionized Ammonia	mg/L	0.02	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01		< 0.01
Calcium	mg/L	-	181	260	85.2	72.1	85.4	67.2	119	67.9	59.9		67.8	94.7	71.4		121
Chloride	mg/L	-	91.2	98.7	75	26.4	29.7	33.9	38.9	26.6	50.6		115	142	24.9		84.8
DOC	mg/L	-	8.4	7.5	7.9	9	10.4	11.9	8	5.1	12.3		12.2	11.5	6.9		11.6
Fluoride	mg/L	-	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1		< 0.1
Iron	mg/L	0.3	**2.73**	**22.5**	0.129	0.176	0.254	**0.322**	0.159	0.071	**0.771**		**1.6**	**0.847**	0.147		**3.18**
Magnesium	mg/L	-	16	18.6	6.11	6.18	7.02	5.76	8.43	4.97	7.48		7.88	11	4.04		10.8
Manganese	mg/L	-	13.6	3.86	0.041	0.161	0.105	0.047	0.084	0.01	0.075		0.491	0.342	0.019		2.71
Nitrate	mg/L	-	0.1	0.1	0.7	0.2	0.06	< 0.05	0.63	0.67	0.08		< 0.05	< 0.05	0.66		0.12
Nitrite	mg/L	-	< 0.1	< 0.1	< 0.1	0.14	< 0.05	< 0.05	0.24	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05		< 0.05
TKN	mg/L	-	3.4	21	0.8	0.9	0.9	0.9	0.6	0.5	1.3		2.7	1.7	1.1		2.2
Sodium	mg/L	-	73.3	73.3	44.4	19.1	24.1	24	34.2	16.2	34.7		62.3	83.5	13.9		65
Sulphate	mg/L	-	17	4	19	9	6	4	33	11	1		2	5	11		33
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	**0.011**	**0.008**	**0.009**	**0.009**	< 0.001	< 0.001		**0.005**	**0.004**	< 0.002		< 0.002
Phosphorus	mg/L	0.03	**0.31**	**5.36**	**0.04**	**0.05**	**0.05**	**0.04**	0.03	0.03	**0.06**		**0.31**	**0.16**	**0.05**		**0.13**
Potassium	mg/L	-	2	1.6	2.8	1.7	1.8	2.1	3.6	2	2		6	6.7	2.4		4.4
Aluminum	mg/L	0.075	**0.18**	**4.59**	**0.11**	**0.09**	**0.1**	0.04	0.06	0.07	0.04		0.05	**0.09**	0.05		0.07
Antimony	mg/L	-	0.0001	0.0001	< 0.0001	0.0004	0.0005	0.0003	< 0.0001	< 0.0001	0.0002		< 0.0001	0.0001	0.0006		0.0003
Arsenic	mg/L	0.1	0.0016	0.0023	0.0005	0.0004	0.0006	0.0006	0.0005	< 0.0001	0.0009		0.0006	0.0005	0.0002		0.0011
Barium	mg/L	-	0.121	0.263	0.036	0.036	0.043	0.026	0.047	0.03	0.033		0.048	0.072	0.029		0.072
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002		< 0.002
Boron	mg/L	0.2	0.07	0.088	0.016	0.007	0.023	0.025	0.027	0.01	0.025		0.045	0.053	0.006		0.063
Cadmium	mg/L	0.0002	< 0.00002	**0.0004**	< 0.000014	< 0.000014	< 0.000014	< 0.000014	0.00003	0.000029	< 0.000015		0.000125	0.000042	< 0.000015		< 0.000015
Chromium	mg/L	0.1	0.0003	0.0037	< 0.0015	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001		0.001	< 0.001	< 0.001		< 0.001
Cobalt	mg/L	0.0006	< 0.005	**0.008**	< 0.0001	0.0002	0.0001	0.0002	< 0.0001	< 0.0001	0.0003		0.0003	0.0002	< 0.0001		**0.0007**
Copper	mg/L	0.005	0.0017	**0.0131**	0.0005	0.0008	0.0007	0.0002	**0.0051**	0.0012	0.0004		**0.0063**	0.0047	0.0014		0.0008
Lead	mg/L	0.025	0.00018	0.0102	< 0.00002	0.00004	0.00005	< 0.00002	0.00038	0.00091	0.00005		0.00074	0.00031	0.00019		0.00009
Mercury	mg/L	-	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002		< 0.00002	< 0.00002	< 0.00002		< 0.00002
Molybdenum	mg/L	0.04	0.0003	0.0001	0.0004	0.0002	0.0002	< 0.0001	0.0003	0.0002	0.0002		0.0001	0.0001	0.0002		0.0002
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01		< 0.01
Selenium	mg/L	-	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001		< 0.001
Silver	mg/L	0.0001	< 0.00002	< 0.00002	**0.00046**	< 0.00002	< 0.00002	< 0.00002	< 0.00002	**0.00057**	< 0.0001		< 0.0001	< 0.0001	< 0.0001		< 0.0001
Strontium	mg/L	-	0.494	0.602	0.239	0.219	0.282	0.203	0.295	0.184	0.227		0.262	0.344	0.17		0.373
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005		< 0.00005
Vanadium	mg/L	-	0.0009	0.0146	0.0003	0.0003	0.0003	< 0.0001	0.0002	0.0002	0.0003		0.0002	0.0002	0.0003		0.0006
Zinc	mg/L	0.03	0.009	**0.158**	0.023	**0.04**	**0.065**	< 0.005	< 0.005	0.013	0.016		0.022	0.021	0.01		0.018
Cyanide	mg/L	0.005															
Turbidity	NTU	-															
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW14 6-Aug-19	SW14 13-Aug-19	SW14 27-Aug-19	SW14 2-Oct-19	SW14 16-Oct-19	SW14 31-Oct-19	SW14 30-Apr-20	SW14 10-Jun-20	SW14 15-Oct-20	SW14 22-Oct-20	SW14 30-Nov-20	SW14 20-Apr-21	SW14 4-May-21	SW14 8-Jul-21	SW14 23-Sep-21
pH -Lab	pH units	6.5-8.5	7.7	8.14	7.47	7.96	7.95	8.01	8.01	7.84	7.64	8.09	8.07	8.32	8.13	8.09	7.91
Conductivity	uS/cm	-		749			739		647			1150		676			
BOD	mg/L	-		< 3			9		< 3			< 3		< 3			
COD	mg/L	-		50			155		21			27		8			
Total Dissolved Solids	mg/L	-		421			535		358			638		389			
Total Suspended Solids	mg/L	-		12			1210		16			14		3			
Alkalinity	mg/L	-		242			199		221			191		269			
Hardness	mg/L	-		261			270		265			339		308			
Ammonia	mg/L	-	0.23	0.09	0.27	0.09	0.46	0.13	0.03	0.56	0.23	0.04	0.05	0.02	0.03	0.06	0.09
Un-ionized Ammonia	mg/L	0.02		< 0.01			< 0.01		< 0.01			< 0.01		< 0.01			
Calcium	mg/L	-		90.4			195		95.6			118		112			
Chloride	mg/L	-		102			76.8		57.9			196		50.2			
DOC	mg/L	-		11.3			13.4		6.2			5.5		6.1			
Fluoride	mg/L	-		< 0.1			< 0.1		< 0.1			< 0.1		< 0.1			
Iron	mg/L	0.3		**1.23**			**24.1**		**0.431**			0.083		0.13			
Magnesium	mg/L	-		8.52			13.2		6.44			10.7		6.86			
Manganese	mg/L	-		0.715			2.75		0.257			0.011		0.086			
Nitrate	mg/L	-		0.09			0.1		0.56			< 0.05		0.63			
Nitrite	mg/L	-		< 0.05			< 0.05		< 0.05			< 0.05		< 0.05			
TKN	mg/L	-		1.5			3.3		0.6			1.5		0.4			
Sodium	mg/L	-		55.8			43.4		31			94.2		29.7			
Sulphate	mg/L	-		12			50		17			87		19			
Phenols	mg/L	0.001		< 0.002			< 0.002		< 0.002			< 0.002		< 0.002			
Phosphorus	mg/L	0.03		**0.13**			**0.64**		**0.05**			**0.12**		**0.06**			
Potassium	mg/L	-		4.6			9.8		2.5			9.8		1.7			
Aluminum	mg/L	0.075		0.05			0.06		0.06			0.05		0.07			
Antimony	mg/L	-		< 0.0001			0.0001		0.0004			0.0001		0.0003			
Arsenic	mg/L	0.1		0.0008			0.0029		0.0003			0.0005		0.0002			
Barium	mg/L	-		0.037			0.181		0.04			0.069		0.039			
Beryillium	mg/L	1.1		< 0.002			< 0.002		< 0.002			< 0.002		< 0.002			
Boron	mg/L	0.2		0.055			0.079		0.02			0.04		0.011			
Cadmium	mg/L	0.0002		< 0.000015			**0.000256**		< 0.000015			< 0.000015		< 0.000015			
Chromium	mg/L	0.1		< 0.001			0.014		< 0.001			< 0.001		0.001			
Cobalt	mg/L	0.0006		0.0003			**0.0064**		0.0003			0.0001		0.0002			
Copper	mg/L	0.005		0.0009			**0.0129**		0.0007			0.0011		0.0009			
Lead	mg/L	0.025		0.00021			0.00975		0.0001			0.00003		0.00007			
Mercury	mg/L	-		< 0.00002			< 0.00002		< 0.00002			< 0.00002		< 0.00002			
Molybdenum	mg/L	0.04		0.0002			0.0002		0.0002			0.0006		0.0002			
Nickel	mg/L	0.025		< 0.01			0.01		< 0.01			< 0.01		< 0.01			
Selenium	mg/L	-		< 0.001			< 0.001		< 0.001			< 0.001		< 0.001			
Silver	mg/L	0.0001		< 0.0001			< 0.0001		< 0.0001			< 0.0001		< 0.0001			
Strontium	mg/L	-		0.279			0.467		0.241			0.332		0.276			
Thallium	mg/L	-		< 0.00005			0.00011		< 0.00005			< 0.00005		< 0.00005			
Vanadium	mg/L	-		0.0006			0.0172		0.0006			0.0005		0.0004			
Zinc	mg/L	0.03		0.01			**0.101**		< 0.005			0.006		0.013			
Cyanide	mg/L	0.005															
Turbidity	NTU	-															
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW14 15-Oct-21	SW14 25-Oct-21	SW14 26-Apr-22	SW14 7-Jun-22	SW14 21-Jun-22	SW14 24-Apr-23	SW14 1-May-23	SW14 8-Jun-23	SW14 26-Jun-23	SW14 15-Aug-23	SW14 16-Aug-23	SW14 5-Oct-23	SW14 27-Mar-24	SW14 10-Apr-24	SW14 25-Apr-24
pH -Lab	pH units	6.5-8.5	8.03	7.98	8.22	8.06	8.08	8.21	8.11	7.93	8.07	7.97	7.95	8.13	8.12	8.23	8.19
Conductivity	uS/cm	-	931		620		768	624		1150			840	872			593
BOD	mg/L	-	< 3		< 3		< 3	11		< 3			<3	<3			<3
COD	mg/L	-	57		22		18	10		14			23	40			30
Total Dissolved Solids	mg/L	-	513		333		418	340		617			467	491			337
Total Suspended Solids	mg/L	-	44		< 3		7	< 3		4			3	62			5
Alkalinity	mg/L	-	297		248		255	241		434			301	243			260
Hardness	mg/L	-	348		277		293	260		435			337	283			287
Ammonia	mg/L	-	0.05	0.04	0.05	0.05	0.06	0.03	0.12	0.15	0.08	<0.05	0.14	0.21	<0.05	<0.05	<0.05
Un-ionized Ammonia	mg/L	0.02	< 0.01		< 0.01		< 0.01	< 0.01		< 0.01			<0.01	<0.01			<0.01
Calcium	mg/L	-	123		99.6		103	91.3		143			120	97.8			103
Chloride	mg/L	-	111		37.2		92.4	52.4		123			86.9	139			31
DOC	mg/L	-	9.2		6.2		7.7	3.5		4.8			7.8	9.3			5.4
Fluoride	mg/L	-	< 0.1		< 0.1		< 0.1	< 0.1		0.1			<0.1	<0.1			<0.1
Iron	mg/L	0.3	**0.341**		0.063		0.126	0.044		**1.9**			0.198	0.14			0.058
Magnesium	mg/L	-	9.79		6.84		8.87	6.34		14.4			9.04	9.35			7.19
Manganese	mg/L	-	0.275		0.021		0.065	0.019		5.47			0.412	0.024			0.014
Nitrate	mg/L	-	< 0.05		0.86		1.56	0.46		< 0.05			0.07	0.17			1.07
Nitrite	mg/L	-	0.07		< 0.05		< 0.05	< 0.05		< 0.05			<0.05	<0.05			<0.05
TKN	mg/L	-	1		0.5		1	0.5		1			0.9	1.4			0.6
Sodium	mg/L	-	56.9		25		45.4	28.5		63.8			50.6	60.4			21.5
Sulphate	mg/L	-	26		13		11	14		3			12	27			12
Phenols	mg/L	0.001	< 0.002		< 0.001		< 0.001	< 0.001		< 0.001			<0.001	<0.001			<0.001
Phosphorus	mg/L	0.03	**0.06**		0.02		**0.05**	0.03		0.03			**0.04**	**0.06**			**0.04**
Potassium	mg/L	-	6.6		2.5		3.4	2.9		2.1			7.1	10.9			2.2
Aluminum	mg/L	0.075	0.03		0.05		0.02	0.02		0.06			**0.1**	0.07			0.06
Antimony	mg/L	-	0.0003		0.0002		0.0003	0.0003		0.0002			0.0001	0.0004			0.0003
Arsenic	mg/L	0.1	0.0006		0.0002		0.0004	0.0002		0.0012			0.0006	0.0004			0.0002
Barium	mg/L	-	0.06		0.037		0.036	0.034		0.068			0.061	0.061			0.035
Beryillium	mg/L	1.1	< 0.002		< 0.002		< 0.002	< 0.002		< 0.002			<0.0001	<0.0001			<0.0001
Boron	mg/L	0.2	0.041		0.015		0.033	0.019		0.073			0.041	0.053			0.013
Cadmium	mg/L	0.0002	< 0.000015		< 0.000015		< 0.000015	< 0.000015		< 0.000015			<0.000015	<0.000015			<0.000015
Chromium	mg/L	0.1	< 0.001		< 0.001		0.001	0.002		< 0.001			<0.001	<0.001			0.001
Cobalt	mg/L	0.0006	0.0003		0.0001		0.0001	0.0001		**0.0016**			0.0004	0.0003			0.0002
Copper	mg/L	0.005	0.0005		0.0007		0.0006	0.0005		0.0004			0.0008	0.0007			0.0014
Lead	mg/L	0.025	0.00008		0.00003		0.00003	< 0.00002		0.00008			0.00007	0.00005			0.00006
Mercury	mg/L	-	< 0.00002		< 0.00002		< 0.00002	< 0.00002		< 0.00002			<0.00002	<0.00002			<0.00002
Molybdenum	mg/L	0.04	0.0003		0.0001		0.0002	0.0002		0.0002			0.0002	0.0003			0.0003
Nickel	mg/L	0.025	< 0.01		< 0.01		< 0.01	< 0.01		< 0.01			0.001	0.0008			0.0004
Selenium	mg/L	-	< 0.001		< 0.001		< 0.001	< 0.001		< 0.001			<0.001	<0.001			<0.001
Silver	mg/L	0.0001	< 0.0001		< 0.0001		< 0.0001	< 0.0001		< 0.0001			<0.0001	<0.0001			0.0001
Strontium	mg/L	-	0.374		0.285		0.314	0.254		0.394			0.347	0.285			0.28
Thallium	mg/L	-	< 0.00005		< 0.00005		< 0.00005	< 0.00005		< 0.00005			<0.00005	<0.00005			<0.00005
Vanadium	mg/L	-	0.0004		0.0003		0.0003	0.0002		0.0006			0.0003	0.0005			0.0003
Zinc	mg/L	0.03	0.005		0.007		< 0.005	< 0.005		< 0.005			<0.005	<0.005			0.012
Cyanide	mg/L	0.005						< 0.005		< 0.005			<0.005	<0.005			<0.005
Turbidity	NTU	-						0.9		12.3			1.6	4			1
Tannins & Lignins	mg/L	-						0.6		1.2			0.6	0.8			<0.5

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW14 1-May-24	SW14 11-Jun-24	SW14 29-Jul-24	SW14 15-Aug-24	SW14 10-Oct-24	SW15 20-Apr-15	SW15 27-Apr-15	SW15 8-Jun-15	SW15 11-Jun-15	SW15 11-Oct-16	SW15 24-Apr-17	SW15 25-May-17	SW15 22-Jun-17	SW15 24-Aug-17	SW15 17-Oct-17
pH -Lab	pH units	6.5-8.5	7.94	7.9	7.63	8.03	8.15	8.1	7.84	8.22	7.93	8.32	8.4	8.24	8.05	7.62	7.87
Conductivity	uS/cm	-		754		637	856	1700	1840	1030	1210	641	1660	730	1030	536	1360
BOD	mg/L	-		4		<3	<3	< 3	4	< 3	< 2	12	<3	<3	<3	6	<3
COD	mg/L	-		40		41	40	20	12	31	13	11	35	27	29	63	47
Total Dissolved Solids	mg/L	-		406		351	498	897	953	535	619	361	793	351	562	459	814
Total Suspended Solids	mg/L	-		14		9	42	5	874	10	14	40	9	64	28	640	172
Alkalinity	mg/L	-		244		217	326	198	297	184	251	185	107	215	312	203	312
Hardness	mg/L	-		264		241	385	316	461	198	229	200	149	173	273	642	589
Ammonia	mg/L	-	0.09	0.22	0.1	0.08	0.16	0.05	< 0.01	0.05	< 0.01	0.07	0.02	0.04	< 0.01	0.13	0.07
Un-ionized Ammonia	mg/L	0.02		<0.01		<0.01	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-		91		82.9	134	114	162	71.3	81.6	65	43	58.9	110	237	211
Chloride	mg/L	-		91.3		72.7	81.4	390	363	186	206	36.8	385	75.1	95.6	28	120
DOC	mg/L	-		9.9		12.2	10.6	3.9	2.5	5.2	5.1	4.6	4.6	5.4	8.3	16.9	8.7
Fluoride	mg/L	-		<0.1		<0.1	<0.1	0.2	0.2	0.2	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3		**0.594**		**0.331**	**0.756**	0.218	**0.929**	0.287	0.169	0.048	0.114	**0.513**	**0.486**	**8.24**	**4.75**
Magnesium	mg/L	-		8.86		8.11	12.1	7.39	13.5	4.71	6.01	11.8	8.82	6.35	10.4	12.4	14.9
Manganese	mg/L	-		0.629		0.198	0.194	0.063	0.569	0.009	0.011	0.027	0.005	0.106	0.281	0.611	1.98
Nitrate	mg/L	-		0.12		<0.05	<0.05	0.4	< 0.1	< 0.1	0.1	< 0.1	0.1	0.05	0.05	0.11	0.05
Nitrite	mg/L	-		<0.05		<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05
TKN	mg/L	-		1.2		1	1.1	0.7	0.6	0.9	1	0.8	1.2	0.5	0.8	2.3	1.2
Sodium	mg/L	-		56.8		46.1	51.9	228	197	128	137	49.7	247	61.2	119	14.5	106
Sulphate	mg/L	-		6		5	12	34	37	31	36	85	38	19	37	16	162
Phenols	mg/L	0.001		<0.001		**0.002**	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.006**	**0.002**	**0.002**	**0.008**	**0.015**	**0.004**
Phosphorus	mg/L	0.03		**0.07**		**0.06**	**0.08**	**0.04**	0.03	**0.05**	**0.04**	**0.05**	0.02	0.03	**0.05**	**0.47**	**0.24**
Potassium	mg/L	-		4.1		4.4	9.1	3.2	1.3	2.5	1.6	1.7	5.9	1.2	1.9	20.4	6.3
Aluminum	mg/L	0.075		**0.18**		**0.11**	**0.37**	**0.16**	0.06	**0.27**	**0.2**	0.04	0.03	**0.11**	**0.24**	**4.4**	**0.63**
Antimony	mg/L	-		0.0005		0.0003	0.0003	0.0004	0.0001	0.0008	0.0005	0.0001	0.0003	0.0001	0.0005	0.0003	0.0002
Arsenic	mg/L	0.1		0.0005		0.0005	0.0004	0.0004	0.0003	0.0006	0.0004	0.0004	0.0019	0.0006	0.001	0.0025	0.0022
Barium	mg/L	-		0.047		0.039	0.058	0.072	0.14	0.051	0.054	0.076	0.046	0.032	0.066	0.155	0.124
Beryillium	mg/L	1.1		<0.0001		<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2		0.048		0.06	0.045	0.037	0.03	0.048	0.04	< 0.005	0.073	0.018	0.067	0.072	0.106
Cadmium	mg/L	0.0002		<0.000015		<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.000014	< 0.000014	0.000016	0.000157	0.000071
Chromium	mg/L	0.1		<0.001		<0.001	<0.001	0.0003	< 0.0002	0.0007	0.0004	< 0.0002	< 0.0015	< 0.001	< 0.001	0.008	0.001
Cobalt	mg/L	0.0006		0.0005		0.0003	0.0005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.0002	0.0003	0.0005	**0.0041**	**0.0037**
Copper	mg/L	0.005		0.0008		0.0007	0.0009	0.0031	0.0014	0.0036	0.002	0.0006	0.0023	0.0014	0.0024	**0.0174**	**0.0098**
Lead	mg/L	0.025		0.00015		0.00009	0.00028	0.0002	0.00006	0.00041	0.00018	0.00225	< 0.00002	0.00018	0.00034	0.00812	0.00161
Mercury	mg/L	-		<0.00002		<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002
Molybdenum	mg/L	0.04		<0.0001		0.0001	0.0002	0.001	< 0.0001	0.001	0.0012	0.0002	0.0008	0.0006	0.0007	0.0009	0.0015
Nickel	mg/L	0.025		0.0009		0.0007	0.001	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-		<0.001		<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001		<0.0001		**0.0004**	<0.0001	**0.00029**	< 0.00002	< 0.00002	< 0.00002	< 0.00002	**0.00043**	0.00002	0.00002	0.00004	0.00002
Strontium	mg/L	-		0.289		0.272	0.397	0.419	0.898	0.268	0.297	0.216	0.286	0.195	0.417	0.497	0.518
Thallium	mg/L	-		<0.00005		<0.00005	<0.00005	0.00022	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00008	< 0.00005
Vanadium	mg/L	-		0.0006		0.0005	0.0009	0.0002	< 0.0001	0.0009	0.0004	0.0002	< 0.0001	0.0002	0.0006	0.0082	0.0012
Zinc	mg/L	0.03		<0.005		0.005	0.007	0.012	< 0.005	0.006	0.005	< 0.005	< 0.005	0.011	**0.103**	**0.085**	**0.063**
Cyanide	mg/L	0.005		<0.005		<0.005	<0.005										
Turbidity	NTU	-		8		8.9	21.7										
Tannins & Lignins	mg/L	-		1		0.7											

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW15 25-Apr-18	SW15 28-Jun-18	SW15 22-Aug-18	SW15 10-Oct-18	SW15 24-Apr-19	SW15 5-Jun-19	SW15 17-Jul-19	SW15 9-Oct-19	SW15 31-Oct-19	SW15 30-Apr-20	SW15 24-Jun-20	SW15 22-Oct-20	SW15 30-Nov-20	SW15 20-Apr-21	SW15 4-May-21
pH -Lab	pH units	6.5-8.5	8.22	7.73	7.68	7.99	8.09	7.96	7.84	7.87	8.14	7.88	7.73	8.09	7.8	8	8.11
Conductivity	uS/cm	-	948	1100	1450	944	958		752	1110		1060	1340	1010		1810	
BOD	mg/L	-	< 3	< 3	8	3	< 3		12	< 3		5	6	4		< 3	
COD	mg/L	-	42	60	93	33	36		83	76		56	65	53		54	
Total Dissolved Solids	mg/L	-	531	579	948	487	493		359	626		585	665	552		1003	
Total Suspended Solids	mg/L	-	7	50	165	6	4		80	62		150	340	19		28	
Alkalinity	mg/L	-	215	99	189	129	163		111	268		293	141	147		331	
Hardness	mg/L	-	230	120	288	171	208		87	386		344	163	239		491	
Ammonia	mg/L	-	0.05	0.07	0.1	0.09	0.04	0.45	0.08	0.07	0.09	0.03	0.18	0.05	0.12	0.26	1.11
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01		< 0.01	< 0.01	< 0.01		0.01	
Calcium	mg/L	-	77.9	32.1	171	53.2	76.1		20.6	133		107	44.3	78.3		171	
Chloride	mg/L	-	164	271	330	197	183		135	190		141	309	185		342	
DOC	mg/L	-	7.1	10.8	8.9	6	6.1		11.5	8.5		5.4	6.1	4.9		6.8	
Fluoride	mg/L	-	0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1		0.1	< 0.1	< 0.1		< 0.1	
Iron	mg/L	0.3	0.096	**0.446**	**9.76**	**0.302**	0.191		0.15	0.022		**2.16**	**1.1**	**0.406**		**2.53**	
Magnesium	mg/L	-	8.64	9.6	16.1	9.24	5.84		7.58	13		18.6	11.8	10.5		15.5	
Manganese	mg/L	-	0.004	0.168	0.754	0.038	0.046		0.075	0.003		0.105	0.073	0.044		0.552	
Nitrate	mg/L	-	1.01	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	< 0.05		0.09	0.21	< 0.05		< 0.05	
Nitrite	mg/L	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	< 0.05		< 0.05	< 0.05	< 0.05		< 0.05	
TKN	mg/L	-	1	1.9	11.1	0.9	1		1.5	2.5		1.6	2.4	1.5		2.3	
Sodium	mg/L	-	98.2	191	232	126	108		118	96.9		92	193	109		203	
Sulphate	mg/L	-	39	6	73	15	15		4	19		30	12	67		55	
Phenols	mg/L	0.001	< 0.001	< 0.001	**0.01**	**0.006**	< 0.002		< 0.002	< 0.002		< 0.002	< 0.001	< 0.002		< 0.002	
Phosphorus	mg/L	0.03	0.03	**0.06**	**0.81**	0.03	**0.05**		**0.04**	**0.37**		**0.22**	**0.06**	**0.07**		**0.21**	
Potassium	mg/L	-	15.2	9.4	2.4	5.1	7.3		8.3	12.9		2.6	7.8	8.1		8.3	
Aluminum	mg/L	0.075	**0.1**	0.03	**2.38**	0.04	0.05		0.02	**0.09**		0.07	0.03	0.02		**0.09**	
Antimony	mg/L	-	0.0002	0.0002	0.0003	0.0002	0.0002		0.0002	0.0001		0.0003	0.0002	0.0001		0.0004	
Arsenic	mg/L	0.1	0.0007	0.0012	0.0027	0.0008	0.0005		0.0008	0.0016		0.0006	0.0023	0.0008		0.0012	
Barium	mg/L	-	0.053	0.037	0.16	0.056	0.052		0.024	0.069		0.054	0.055	0.059		0.111	
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002		< 0.002	< 0.002	< 0.002		< 0.002	
Boron	mg/L	0.2	0.142	0.111	0.144	0.09	0.047		**0.203**	0.089		0.055	**0.281**	0.149		**0.265**	
Cadmium	mg/L	0.0002	< 0.000015	0.000071	**0.000255**	0.000037	< 0.000015		< 0.000015	0.000049		< 0.000015	< 0.000015	< 0.000015		< 0.000015	
Chromium	mg/L	0.1	< 0.001	< 0.001	0.006	< 0.001	0.001		< 0.001	< 0.001		< 0.001	< 0.001	0.001		0.001	
Cobalt	mg/L	0.0006	0.0001	0.0004	**0.0026**	0.0001	0.0002		0.0002	**0.002**		0.0005	0.0002	0.0002		**0.0021**	
Copper	mg/L	0.005	0.0021	**0.0096**	**0.0164**	**0.0054**	0.0021		0.0017	**0.0055**		0.0011	0.0007	0.0004		0.001	
Lead	mg/L	0.025	0.00012	0.0004	0.00479	0.00033	0.00014		0.00012	0.00329		0.00059	0.00023	0.00022		0.00035	
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002		< 0.00002	< 0.00002		< 0.00002	< 0.00002	< 0.00002		< 0.00002	
Molybdenum	mg/L	0.04	0.0007	0.0002	0.0007	0.0004	0.0005		0.0001	0.0005		0.0003	0.0006	0.0005		0.0006	
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01		< 0.01	< 0.01	< 0.01		< 0.01	
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001		< 0.001	< 0.001	< 0.001		0.001	
Silver	mg/L	0.0001	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001		< 0.0001	
Strontium	mg/L	-	0.252	0.199	0.551	0.247	0.227		0.131	0.404		0.414	0.237	0.324		0.578	
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005		< 0.00005	
Vanadium	mg/L	-	0.0001	0.0002	0.0055	0.0001	0.0002		< 0.0001	0.0032		0.0008	0.0005	0.0002		0.0007	
Zinc	mg/L	0.03	0.005	**0.037**	**0.072**	**0.032**	0.023		0.01	< 0.005		0.01	0.011	< 0.005		0.012	
Cyanide	mg/L	0.005				< 0.005	< 0.005										
Turbidity	NTU	-				2.6	330										
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW15 15-Jun-21	SW15 8-Jul-21	SW15 23-Sep-21	SW15 15-Oct-21	SW15 26-Apr-22	SW15 7-Jun-22	SW15 24-Apr-23	SW15 1-May-23	SW15 8-Jun-23	SW15 26-Jun-23	SW15 27-Mar-24	SW15 10-Apr-24	SW15 25-Apr-24	SW15 1-May-24	SW15 11-Jun-24
pH -Lab	pH units	6.5-8.5	7.7	8.13	8.02	7.72	8.03	7.79	8.06	8.15	Dry	7.84	8.23	8.23	Dry	8.27	Dry
Conductivity	uS/cm	-	854			873	2140		2090								
BOD	mg/L	-	24			5	< 3		22								
COD	mg/L	-	101			89	34		147								
Total Dissolved Solids	mg/L	-	484			469	1226		1187								
Total Suspended Solids	mg/L	-	89			84	285		3900								
Alkalinity	mg/L	-	225			142	233		319								
Hardness	mg/L	-	234			161	523		607								
Ammonia	mg/L	-	0.15	0.17	0.06	0.08	1.35	0.08	0.19	2.58		<0.05	5.55	0.07		0.06	
Un-ionized Ammonia	mg/L	0.02	< 0.01			< 0.01	**0.03**		< 0.01								
Calcium	mg/L	-	71.3			48.5	191		367								
Chloride	mg/L	-	143			182	497		328								
DOC	mg/L	-	31.5			7.9	2.5		3.5								
Fluoride	mg/L	-	< 0.1			< 0.1	< 0.1		< 1								
Iron	mg/L	0.3	**2.75**			**7.59**	**4.04**		**7.69**								
Magnesium	mg/L	-	13.6			9.74	11		28.8								
Manganese	mg/L	-	0.266			0.219	0.184		0.476								
Nitrate	mg/L	-	0.1			< 0.05	1.45		14								
Nitrite	mg/L	-	< 0.05			0.1	< 0.05		< 0.5								
TKN	mg/L	-	3.1			3.4	1.9		5								
Sodium	mg/L	-	90.1			110	311		167								
Sulphate	mg/L	-	5			13	63		219								
Phenols	mg/L	0.001	< 0.002			< 0.002	< 0.001		< 0.001								
Phosphorus	mg/L	0.03	**0.44**			**0.23**	**0.39**		**0.62**								
Potassium	mg/L	-	9			11.8	7		42.2								
Aluminum	mg/L	0.075	0.06			0.01	**0.09**		0.06								
Antimony	mg/L	-	0.0001			0.0005	0.0006		0.0008								
Arsenic	mg/L	0.1	0.0016			0.0034	0.0011		0.0024								
Barium	mg/L	-	0.042			0.05	0.122		0.267								
Beryillium	mg/L	1.1	< 0.002			< 0.002	< 0.002		< 0.002								
Boron	mg/L	0.2	0.145			**0.215**	0.137		**0.999**								
Cadmium	mg/L	0.0002	< 0.000015			0.000025	0.000069		0.000175								
Chromium	mg/L	0.1	0.002			0.001	0.003		0.011								
Cobalt	mg/L	0.0006	0.0003			**0.0009**	**0.0017**		**0.0045**								
Copper	mg/L	0.005	0.002			0.002	**0.0057**		**0.0182**								
Lead	mg/L	0.025	0.00036			0.00082	0.00437		0.0104								
Mercury	mg/L	-	< 0.00002			< 0.00002	< 0.00002		< 0.00002								
Molybdenum	mg/L	0.04	0.0001			0.0005	0.0006		0.0008								
Nickel	mg/L	0.025	< 0.01			< 0.01	< 0.01		0.01								
Selenium	mg/L	-	< 0.001			< 0.001	< 0.002		< 0.002								
Silver	mg/L	0.0001	< 0.0001			< 0.0001	< 0.0001		< 0.0001								
Strontium	mg/L	-	0.308			0.282	0.656		1.1								
Thallium	mg/L	-	< 0.00005			< 0.00005	< 0.0001		< 0.0001								
Vanadium	mg/L	-	0.0006			0.0015	0.003		0.0082								
Zinc	mg/L	0.03	0.021			0.012	0.029		**0.162**								
Cyanide	mg/L	0.005							< 0.005								
Turbidity	NTU	-							576								
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW15 29-Jul-24	SW15 15-Aug-24	SW15 10-Oct-24	SW16 11-Jun-15	SW16 11-Oct-16	SW16 24-Apr-17	SW16 22-Jun-17	SW16 24-Aug-17	SW16 17-Oct-17	SW16 25-Apr-18	SW16 28-Jun-18	SW16 22-Aug-18	SW16 10-Oct-18	SW16 24-Apr-19	SW16 17-Jul-19
pH -Lab	pH units	6.5-8.5	7.88	7.85	7.82	7.71	8.23	8.03	7.77	7.67	8.2	8.22	7.98	7.62	7.43	7.98	7.85
Conductivity	uS/cm	-		448	630	1830	644	1230	740	561	757	544	2470	1110	1380	464	1870
BOD	mg/L	-		<3	<3	< 2	10	<3	18	7	<3	< 3	< 3	8	22	< 3	33
COD	mg/L	-		23	32	6	28	32	55	77	29	23	56	345	296	30	95
Total Dissolved Solids	mg/L	-		247	358	865	393	610	372	278	369	285	1353	635	724	235	921
Total Suspended Solids	mg/L	-		11	11	8	490	40	21	26	42	12	40	140	700	8	85
Alkalinity	mg/L	-		100	139	390	185	268	229	86	137	145	334	155	300	133	174
Hardness	mg/L	-		127	187	378	215	380	253	100	195	169	474	172	488	162	185
Ammonia	mg/L	-	0.1	0.31	0.34	< 0.01	0.04	0.02	< 0.01	0.03	0.03	0.02	0.45	0.08	0.13	0.03	0.16
Un-ionized Ammonia	mg/L	0.02		**0.03**	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-		41.2	61.6	133	93.6	134	91.3	35.9	61.7	60	166	68.5	167	55.9	62.5
Chloride	mg/L	-		62.7	100	304	36.8	207	76.1	103	115	77.2	608	263	237	53.5	420
DOC	mg/L	-		7.4	10.3	3.4	5.4	6.7	11.8	10.7	7.2	5	7.4	9.1	8.9	6.9	22.3
Fluoride	mg/L	-		<0.1	<0.1	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3		**0.361**	**0.479**	0.231	**0.779**	0.157	1	**2.99**	**0.321**	0.099	**0.462**	**10.8**	**3.9**	0.15	**0.922**
Magnesium	mg/L	-		5.84	7.99	11	12.8	8.98	8.48	6.86	9.92	4.68	14.3	9.56	17.1	3.77	7.92
Manganese	mg/L	-		0.021	0.019	0.265	0.089	0.064	0.509	0.155	0.026	0.013	2	0.255	0.583	0.045	0.752
Nitrate	mg/L	-		0.1	0.14	< 0.1	0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05
Nitrite	mg/L	-		<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
TKN	mg/L	-		1	1.5	0.4	0.7	1	1.3	1.5	0.9	0.6	2.1	10.1	8	0.7	2.3
Sodium	mg/L	-		44.2	63.5	148	49.8	81.6	50.2	69.6	73.5	39.2	348	158	98.2	29.2	312
Sulphate	mg/L	-		26	32	33	85	15	2	5	21	13	2	29	24	8	5
Phenols	mg/L	0.001		**0.002**	<0.001	< 0.001	**0.008**	**0.002**	**0.012**	**0.011**	**0.005**	< 0.001	< 0.001	**0.004**	**0.011**	< 0.002	< 0.002
Phosphorus	mg/L	0.03		**0.05**	**0.04**	0.03	**0.09**	**0.07**	**0.12**	**0.14**	**0.05**	**0.05**	**0.11**	**0.62**	**0.7**	**0.05**	**0.21**
Potassium	mg/L	-		6.1	8.9	0.6	2.2	2.8	4.5	2.3	5	3.4	11.2	3	1.7	4.3	7.2
Aluminum	mg/L	0.075		**0.27**	**0.33**	0.05	**0.48**	**0.17**	0.06	**0.13**	0.06	0.05	**0.09**	**0.73**	**0.14**	0.04	0.03
Antimony	mg/L	-		0.0006	0.0006	0.0001	0.0001	0.0002	0.0003	0.0002	0.0002	< 0.0001	0.0003	0.0003	< 0.0001	0.0002	0.0003
Arsenic	mg/L	0.1		0.0005	0.0007	0.0003	0.0006	0.0016	0.0015	0.0009	0.001	0.0004	0.0018	0.0031	0.0009	0.0002	0.0018
Barium	mg/L	-		0.036	0.06	0.096	0.059	0.055	0.067	0.044	0.058	0.028	0.111	0.106	0.156	0.029	0.138
Beryillium	mg/L	1.1		<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2		0.088	0.082	0.028	< 0.005	0.019	0.037	0.045	0.061	0.021	0.066	0.101	0.062	0.015	0.046
Cadmium	mg/L	0.0002		<0.000015	<0.000015	< 0.00002	0.00009	0.000015	< 0.000014	0.000078	0.000046	< 0.000015	0.000017	0.000135	0.000055	< 0.000015	< 0.000015
Chromium	mg/L	0.1		<0.001	<0.001	< 0.0002	0.0009	< 0.0015	< 0.001	< 0.001	0.001	< 0.001	0.001	0.003	0.001	< 0.001	0.015
Cobalt	mg/L	0.0006		0.0003	0.0004	< 0.005	0.0005	0.0002	0.0002	0.0004	< 0.0001	< 0.0001	**0.001**	**0.0012**	0.0005	< 0.0001	0.0005
Copper	mg/L	0.005		0.003	0.0027	0.0005	0.0031	0.001	0.0007	**0.0097**	**0.0071**	0.0007	0.0025	**0.0105**	**0.0104**	0.001	0.004
Lead	mg/L	0.025		0.00037	0.00044	< 0.00002	0.0025	0.0001	0.00003	0.00062	0.00045	0.00005	0.00011	0.00238	0.00079	0.00008	0.00011
Mercury	mg/L	-		<0.00002	<0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04		0.0006	0.0008	0.0002	0.0002	0.001	0.0002	0.0003	0.0005	0.0003	0.0003	0.0013	0.0002	0.0003	< 0.0001
Nickel	mg/L	0.025		0.0014	0.0015	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-		<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001		**0.0003**	<0.0001	< 0.00002	0.00002	**0.00043**	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-		0.254	0.326	0.582	0.268	0.384	0.334	0.171	0.231	0.162	0.6	0.279	0.584	0.16	0.282
Thallium	mg/L	-		<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-		0.0005	0.0006	< 0.0001	0.0011	0.0004	0.0001	0.0002	0.0002	< 0.0001	0.0003	0.0033	0.0004	< 0.0001	0.0003
Zinc	mg/L	0.03		0.007	0.01	< 0.005	0.022	**0.034**	0.019	**0.046**	**0.062**	< 0.005	0.016	**0.039**	0.026	0.009	0.012
Cyanide	mg/L	0.005		<0.005	<0.005	< 0.005		< 0.005		< 0.005		< 0.005					
Turbidity	NTU	-		17.1	19	1.7		3.1		8.9		194					
Tannins & Lignins	mg/L	-		0		< 0.5		1.4		0.9		2.7					

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW16 9-Oct-19	SW16 20-Apr-21	SW16 15-Oct-21	SW16 26-Apr-22	SW16 24-Apr-23	SW16 8-Jun-23	SW16 16-Aug-23	SW16 5-Oct-23	SW16 25-Apr-24	SW16 11-Jun-24	SW16 15-Aug-24	SW18 20-Apr-15	SW18 28-Apr-15	SW18 8-Jun-15	SW18 11-Jun-15
pH -Lab	pH units	6.5-8.5	7.64	8.19	7.81	8.03	8.06	Dry	Dry	Dry	Dry	Dry	Dry	8.26	7.94	8.19	7.74
Conductivity	uS/cm	-	1160	1230	1720	2320	2060							585	657	699	574
BOD	mg/L	-	22	< 3	7	< 3	< 3							3	< 2	< 3	< 2
COD	mg/L	-	132	9	70	36	36							11	23	26	38
Total Dissolved Solids	mg/L	-	660	697	1051	1262	1130							318	351	370	288
Total Suspended Solids	mg/L	-	700	< 3	200	39	110							< 3	< 3	5	8
Alkalinity	mg/L	-	270	289	334	228	212							244	198	285	156
Hardness	mg/L	-	386	384	626	374	245							273	232	287	162
Ammonia	mg/L	-	0.06	0.02	0.2	1.33	0.03							0.03	0.01	0.05	< 0.01
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	0.02	< 0.01							< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-	135	132	217	135	91.2							99.5	80.1	103	54
Chloride	mg/L	-	232	211	356	552	563							27.4	82.6	44.5	82.5
DOC	mg/L	-	9.4	5.7	8	2.1	1.4							7.7	5.2	8.2	10.8
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 1							0.1	< 0.1	0.1	0.1
Iron	mg/L	0.3	**4.36**	0.212	**36**	**1.25**	**1.51**							0.058	0.107	0.115	**0.387**
Magnesium	mg/L	-	11.7	13.1	20.2	8.94	7.19							5.98	7.74	6.99	6.52
Manganese	mg/L	-	0.481	0.008	1.04	0.084	0.165							0.008	0.024	0.017	0.156
Nitrate	mg/L	-	< 0.05	< 0.05	< 0.05	0.34	< 0.5							1.6	< 0.1	0.6	0.1
Nitrite	mg/L	-	< 0.05	< 0.05	0.09	< 0.05	< 0.5							< 0.1	< 0.1	< 0.1	< 0.1
TKN	mg/L	-	5.8	0.6	1.9	1.8	1.1							0.5	0.7	0.7	1
Sodium	mg/L	-	107	119	119	368	298							16.8	42.3	29.3	42.5
Sulphate	mg/L	-	5	37	98	54	40							13	15	11	6
Phenols	mg/L	0.001	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001							< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	0.03	**0.48**	**0.06**	**0.56**	**0.13**	**0.15**							0.02	**0.04**	0.02	**0.09**
Potassium	mg/L	-	2.4	1.5	3.3	4.3	3.2							1.6	5.1	1.3	0.9
Aluminum	mg/L	0.075	**0.08**	**0.08**	0.06	0.06	0.04							0.06	0.03	**0.1**	0.02
Antimony	mg/L	-	0.0001	0.0003	0.0005	0.0005	0.0008							0.0001	0.0001	0.0003	0.0003
Arsenic	mg/L	0.1	0.0014	0.0004	0.01	0.0006	0.0009							0.0002	0.0004	0.0003	0.0004
Barium	mg/L	-	0.077	0.069	0.158	0.106	0.078							0.032	0.03	0.034	0.022
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002							< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.039	0.023	0.07	0.083	0.054							0.011	0.025	0.016	0.032
Cadmium	mg/L	0.0002	0.000046	< 0.000015	< 0.000028	0.000031	0.000032							< 0.00002	0.00017	< 0.00002	< 0.00002
Chromium	mg/L	0.1	0.002	< 0.001	0.001	0.001	0.004							< 0.0002	< 0.0002	< 0.0002	0.0003
Cobalt	mg/L	0.0006	0.0006	0.0002	**0.0015**	**0.0007**	**0.001**							< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	0.005	0.0043	0.0011	0.0006	0.0037	**0.0058**							0.0009	0.0005	0.0006	< 0.0001
Lead	mg/L	0.025	0.00072	0.00005	0.00018	0.00149	0.00212							0.00003	0.00003	< 0.00002	< 0.00002
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002							< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0003	0.0014	0.0005	0.0007	0.0008							0.0002	0.0005	0.0002	< 0.0001
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01							< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002							< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001							**0.00017**	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	-	0.403	0.421	0.794	0.544	0.391							0.264	0.254	0.3	0.172
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.0001	< 0.0001	< 0.0001							0.0001	0.0001	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0006	0.0001	0.0051	0.0012	0.0021							0.0003	0.0001	0.0006	0.0001
Zinc	mg/L	0.03	0.024	0.013	0.007	0.016	0.013							< 0.005	< 0.005	< 0.005	< 0.005
Cyanide	mg/L	0.005					< 0.005										
Turbidity	NTU	-					180										
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW18 15-Jul-15	SW18 17-Nov-15	SW18 21-Apr-16	SW18 26-May-16	SW18 8-Jun-16	SW18 24-Apr-17	SW18 23-May-17	SW18 22-Jun-17	SW18 24-Aug-17	SW18 17-Oct-17	SW18 25-Apr-18	SW18 28-Jun-18	SW18 22-Aug-18	SW18 11-Oct-18	SW18 24-Apr-19
pH -Lab	pH units	6.5-8.5	7.41	7.96	7.82	7.91	8.04	8.13	8.18	7.93	7.87	8.24	8.19	7.96	7.79	7.73	8.14
Conductivity	uS/cm	-	577	705	794	1010	1280	763	522	525	527	847	429	504	690	927	436
BOD	mg/L	-	< 3	3	3	5	13	<3	<3	<3	<3	<3	< 3	< 3	5	86	< 3
COD	mg/L	-	36	16	29	47	41	35	22	33	29	25	20	103	54	244	25
Total Dissolved Solids	mg/L	-	304	394	426	598	731	393	253	277	304	451	231	274	365	490	226
Total Suspended Solids	mg/L	-	14	8	4	300	170	<3	<3	3	6	3	5	10	14	400	6
Alkalinity	mg/L	-	207	186	198	310	343	182	213	223	203	324	177	147	180	247	164
Hardness	mg/L	-	235	263	241	388	548	216	193	231	291	357	179	178	193	246	197
Ammonia	mg/L	-	0.08	< 0.01	0.04	0.26	0.13	0.01	0.05	0.04	0.03	0.03	0.03	0.06	0.1	0.17	0.03
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-	82.2	90.7	82.9	138	200	76.5	68.9	84	105	129	64.8	58.2	68.3	257	71
Chloride	mg/L	-	48.6	80.2	121	143	189	111	24.3	24.2	35.1	44.9	27.2	68.9	112	146	25
DOC	mg/L	-	8.6	8.7	9.1	8.6	5.4	9.1	8.5	10.7	11.9	6.3	5.2	14.9	11.9	16.8	4.9
Fluoride	mg/L	-	< 0.1	0.1	0.1	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	**1.14**	0.088	0.147	**4.87**	**1.09**	0.091	0.024	**0.307**	**0.625**	0.041	0.052	**0.97**	**1.44**	**9.12**	0.153
Magnesium	mg/L	-	7.28	8.9	8.29	10.7	11.9	6.08	4.98	6.02	7.84	8.37	4.14	7.81	7.51	12.4	4.04
Manganese	mg/L	-	0.577	0.017	0.063	1.6	0.729	0.028	0.022	0.103	0.672	0.005	0.006	0.26	0.628	1.16	0.023
Nitrate	mg/L	-	< 0.1	< 0.1	0.1	0.4	0.2	< 0.1	< 0.05	0.14	< 0.05	1.78	0.64	< 0.05	< 0.05	< 0.05	0.67
Nitrite	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
TKN	mg/L	-	1.1	0.9	0.4	2.5	1.5	0.8	1.8	1	0.8	0.5	0.5	1.6	1.7	10.4	0.8
Sodium	mg/L	-	34.3	46	68.7	89	90.9	64.9	17.2	20.3	25.4	37.1	15.3	43.3	60.5	85.4	14
Sulphate	mg/L	-	4	49	18	21	29	22	9	6	5	35	11	2	1	10	10
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.005**	**0.008**	**0.005**	**0.009**	**0.002**	< 0.001	**0.005**	**0.007**	**0.007**	< 0.002
Phosphorus	mg/L	0.03	**0.07**	**0.05**	0.02	**0.43**	**0.18**	**0.04**	0.01	**0.04**	**0.05**	0.02	0.03	**0.14**	**0.18**	**1.58**	**0.04**
Potassium	mg/L	-	1.4	8.1	6.9	2.2	2	4	1.3	1.7	2.7	2	2	4	5.5	7.7	2.4
Aluminum	mg/L	0.075	0.07	0.06	0.03	**1.15**	**0.33**	0.04	0.03	0.03	**0.22**	0.07	0.06	0.07	0.05	**2.56**	0.05
Antimony	mg/L	-	0.0003	< 0.0001	0.0001	0.0001	0.0002	< 0.0001	< 0.0001	0.0001	0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0001
Arsenic	mg/L	0.1	0.0006	0.0005	0.0004	0.001	0.0008	0.0007	0.0003	0.0007	0.0006	0.0004	0.0002	0.0008	0.0005	0.0013	0.0002
Barium	mg/L	-	0.051	0.04	0.036	0.084	0.105	0.031	0.026	0.029	0.073	0.047	0.022	0.038	0.045	0.208	0.029
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.039	0.041	0.027	0.052	0.021	0.023	0.007	0.016	0.027	0.018	0.008	0.032	0.046	0.067	0.005
Cadmium	mg/L	0.0002	< 0.00002	< 0.00002	< 0.00002	0.00006	0.00007	< 0.000014	< 0.000014	< 0.000014	0.000076	0.000041	< 0.000015	0.000072	0.000091	**0.000315**	< 0.000015
Chromium	mg/L	0.1	0.0006	0.0002	0.0003	0.0017	0.0006	< 0.0015	0.012	< 0.001	0.001	< 0.001	< 0.001	0.001	0.001	0.003	< 0.001
Cobalt	mg/L	0.0006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.0001	0.0002	0.0006	< 0.0001	< 0.0001	0.0004	0.0003	**0.0023**	< 0.0001
Copper	mg/L	0.005	< 0.0001	0.0007	0.0007	0.0038	**0.0053**	0.0004	0.0008	0.0005	**0.0059**	**0.006**	0.0005	**0.0068**	**0.0069**	**0.0172**	0.0011
Lead	mg/L	0.025	< 0.00002	0.00005	0.00002	0.00199	0.00099	< 0.00002	0.00004	0.00003	0.00063	0.00036	0.00004	0.00038	0.00054	0.00375	0.00007
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002
Molybdenum	mg/L	0.04	< 0.0001	0.0006	0.0004	< 0.0001	0.0003	0.0006	0.0002	0.0002	0.0002	0.0003	0.0002	0.0001	0.0001	0.0004	0.0002
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	**0.00037**	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.264	0.287	0.279	0.377	0.523	0.223	0.199	0.249	0.298	0.291	0.158	0.235	0.257	0.53	0.17
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0003	0.0003	0.0001	0.0033	0.0012	0.0002	< 0.0001	0.0002	0.0005	0.0004	0.0003	0.0004	0.0001	0.0073	0.0002
Zinc	mg/L	0.03	0.017	< 0.005	< 0.005	**0.399**	**0.188**	**0.046**	**0.042**	0.005	**0.63**	0.011	< 0.005	0.03	0.02	**0.228**	0.008
Cyanide	mg/L	0.005															
Turbidity	NTU	-															
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW18 5-Jun-19	SW18 17-Jul-19	SW18 6-Aug-19	SW18 13-Aug-19	SW18 27-Aug-19	SW18 10-Sep-19	SW18 2-Oct-19	SW18 8-Oct-19	SW18 16-Oct-19	SW18 31-Oct-19	SW18 30-Apr-20	SW18 15-Oct-20	SW18 22-Oct-20	SW18 30-Nov-20	SW18 20-Apr-21
pH -Lab	pH units	6.5-8.5	8.16	7.92	7.76	8.08	7.4	7.84	8	7.74	7.81	8.04	7.99	7.83	7.96	7.95	8.31
Conductivity	uS/cm	-		819		691				799			643		1140		676
BOD	mg/L	-		11		4				4			< 3		< 3		< 3
COD	mg/L	-		44		68				33			25		< 5		9
Total Dissolved Solids	mg/L	-		411		368				424			355		631		386
Total Suspended Solids	mg/L	-		300		20				16			5		31		< 3
Alkalinity	mg/L	-		230		155				188			222		180		270
Hardness	mg/L	-		294		190				229			254		331		305
Ammonia	mg/L	-	0.02	1.15	0.19	0.13	2.12	1.39	0.16	0.52	0.77	0.05	0.03	0.07	0.05	0.04	0.02
Un-ionized Ammonia	mg/L	0.02		0.02		0.02				0.02			< 0.01		< 0.01		< 0.01
Calcium	mg/L	-		94.7		62.3				77.3			91.4		112		111
Chloride	mg/L	-		87		124				139			56.4		197		49
DOC	mg/L	-		12.1		11.3				9.3			6.4		6		6.4
Fluoride	mg/L	-		< 0.1		< 0.1				< 0.1			< 0.1		< 0.1		< 0.1
Iron	mg/L	0.3		**2.99**		**1.1**				**1.41**			0.211		**0.683**		0.061
Magnesium	mg/L	-		8.08		8.27				8.8			6.18		12.3		6.79
Manganese	mg/L	-		1.91		0.341				0.748			0.114		0.243		0.029
Nitrate	mg/L	-		0.05		0.06				< 0.05			0.74		< 0.05		0.69
Nitrite	mg/L	-		0.05		< 0.05				< 0.05			< 0.05		< 0.05		< 0.05
TKN	mg/L	-		2.4		2.7				1.6			0.6		2.5		0.4
Sodium	mg/L	-		58.7		66.3				69.2			30		96.3		29.3
Sulphate	mg/L	-		14		4				7			16		87		18
Phenols	mg/L	0.001		< 0.002		< 0.002				< 0.002			< 0.002		< 0.002		< 0.002
Phosphorus	mg/L	0.03		**0.14**		**0.25**				**0.09**			0.03		**0.25**		**0.04**
Potassium	mg/L	-		4.9		9.1				7.2			2.4		13.4		1.6
Aluminum	mg/L	0.075		0.06		0.03				0.06			0.06		0.04		**0.08**
Antimony	mg/L	-		0.0003		0.0001				0.0002			0.0004		0.0002		0.0001
Arsenic	mg/L	0.1		0.0012		0.0005				0.0008			0.0002		0.0007		0.0002
Barium	mg/L	-		0.061		0.044				0.054			0.037		0.068		0.038
Beryillium	mg/L	1.1		< 0.002		< 0.002				< 0.002			< 0.002		< 0.002		< 0.002
Boron	mg/L	0.2		0.061		0.052				0.046			0.018		0.048		0.011
Cadmium	mg/L	0.0002		< 0.000015		< 0.000015				< 0.000015			< 0.000015		0.000027		< 0.000015
Chromium	mg/L	0.1		< 0.001		< 0.001				0.002			< 0.001		0.001		< 0.001
Cobalt	mg/L	0.0006		0.0006		0.0002				0.0004			0.0002		0.0002		< 0.0001
Copper	mg/L	0.005		0.0006		0.0009				0.0029			0.0007		0.0027		0.0007
Lead	mg/L	0.025		0.0001		0.00026				0.00006			0.00006		0.00013		0.00004
Mercury	mg/L	-		< 0.00002		< 0.00002				< 0.00002			< 0.00002		< 0.00002		< 0.00002
Molybdenum	mg/L	0.04		0.0002		< 0.0001				0.0002			0.0002		0.0005		0.0002
Nickel	mg/L	0.025		< 0.01		< 0.01				< 0.01			< 0.01		< 0.01		< 0.01
Selenium	mg/L	-		< 0.001		< 0.001				< 0.001			< 0.001		< 0.001		< 0.001
Silver	mg/L	0.0001		< 0.0001		< 0.0001				< 0.0001			< 0.0001		< 0.0001		< 0.0001
Strontium	mg/L	-		0.305		0.26				0.253			0.236		0.362		0.277
Thallium	mg/L	-		< 0.00005		< 0.00005				< 0.00005			< 0.00005		< 0.00005		< 0.00005
Vanadium	mg/L	-		0.0006		0.0007				0.0003			0.0004		0.0006		0.0004
Zinc	mg/L	0.03		0.026		0.022				**0.103**			< 0.005		**0.053**		0.009
Cyanide	mg/L	0.005															
Turbidity	NTU	-															
Tannins & Lignins	mg/L	-															

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW18 4-May-21	SW18 15-Jun-21	SW18 8-Jul-21	SW18 11-Aug-21	SW18 23-Sep-21	SW18 15-Oct-21	SW18 25-Oct-21	SW18 26-Apr-22	SW18 7-Jun-22	SW18 21-Jun-22	SW18 5-Jul-22	SW18 17-Oct-22	SW18 24-Apr-23	SW18 1-May-23	SW18 8-Jun-23
pH -Lab	pH units	6.5-8.5	8.21	7.88	8.14	7.86	8.02	7.86	7.88	8.32	8.12	7.88	7.43	7.83	8.31	8.19	7.95
Conductivity	uS/cm	-		1050		691		912		649		749		1200	643		1030
BOD	mg/L	-		< 3		< 3		14		< 3		< 3		< 3	< 3		< 3
COD	mg/L	-		55		42		146		23		33		52	9		44
Total Dissolved Solids	mg/L	-		576		361		579		351		401		641	349		525
Total Suspended Solids	mg/L	-		8		8		1400		< 3		10		6	< 3		64
Alkalinity	mg/L	-		216		198		288		270		212		213	272		251
Hardness	mg/L	-		274		199		401		288		207		306	290		277
Ammonia	mg/L	-	0.02	0.19	0.03	0.19	0.08	0.14	0.04	0.1	2.51	0.05	0.19	0.18	0.01	0.16	0.21
Un-ionized Ammonia	mg/L	0.02		< 0.01		< 0.01		< 0.01		< 0.01		< 0.01		< 0.01	< 0.01		< 0.01
Calcium	mg/L	-		90.2		65.8		142		104		69.8		94.4	96.4		84.6
Chloride	mg/L	-		196		101		117		37		110		237	43.8		176
DOC	mg/L	-		10.5		10.1		9.9		6		9.3		4.1	5.6		5.7
Fluoride	mg/L	-		< 0.1		< 0.1		< 0.1		< 0.1		< 0.1		< 0.1	< 0.1		0.1
Iron	mg/L	0.3		**1.07**		**1.12**		**21.8**		0.056		0.253		0.073	0.031		**1.01**
Magnesium	mg/L	-		11.7		8.32		11.3		6.75		7.81		11.2	6.12		10.3
Manganese	mg/L	-		0.252		1		22.3		0.011		0.149		0.023	0.011		0.5
Nitrate	mg/L	-		0.08		0.09		< 0.05		1.23		0.87		0.1	0.84		< 0.05
Nitrite	mg/L	-		< 0.05		< 0.05		< 0.05		< 0.05		< 0.05		< 0.05	< 0.05		< 0.05
TKN	mg/L	-		1.8		1.5		5.6		0.8		1.1		3	0.5		1.8
Sodium	mg/L	-		103		56.6		58.2		23.7		54.9		105	23.9		86.5
Sulphate	mg/L	-		11		5		26		14		7		47	14		6
Phenols	mg/L	0.001		**0.002**		< 0.002		< 0.002		< 0.001		< 0.001		< 0.001	< 0.001		< 0.001
Phosphorus	mg/L	0.03		**0.12**		**0.1**		**1.06**		0.02		**0.06**		**0.19**	**0.04**		**0.1**
Potassium	mg/L	-		5.6		3.3		8.1		2.3		4.3		17.7	2.2		8.6
Aluminum	mg/L	0.075		0.07		0.03		0.03		0.06		0.02		0.04	0.02		0.03
Antimony	mg/L	-		0.0001		0.0004		0.0004		0.0003		0.0004		0.0004	0.0001		0.0003
Arsenic	mg/L	0.1		0.0009		0.0007		0.005		0.0002		0.0005		0.0004	0.0002		0.0008
Barium	mg/L	-		0.051		0.043		0.394		0.038		0.035		0.056	0.035		0.053
Beryillium	mg/L	1.1		< 0.002		< 0.002		< 0.002		< 0.002		< 0.002		< 0.002	< 0.002		< 0.002
Boron	mg/L	0.2		0.058		0.072		0.058		0.013		0.047		0.091	0.012		0.074
Cadmium	mg/L	0.0002		< 0.000015		< 0.000015		**0.000242**		< 0.000015		< 0.000015		< 0.000028	< 0.000015		< 0.000015
Chromium	mg/L	0.1		0.002		< 0.001		0.006		< 0.001		< 0.001		< 0.001	0.002		< 0.001
Cobalt	mg/L	0.0006		0.0003		0.0004		**0.0109**		0.0001		0.0001		< 0.0002	0.0001		0.0003
Copper	mg/L	0.005		0.0007		0.0003		**0.0054**		0.0009		0.0004		0.0003	0.0006		0.0004
Lead	mg/L	0.025		0.00009		0.00006		0.00322		0.00005		0.00002		0.00011	0.00003		0.0002
Mercury	mg/L	-		< 0.00002		< 0.00002		0.00002		< 0.00002		< 0.00002		< 0.00002	< 0.00002		< 0.00002
Molybdenum	mg/L	0.04		0.0002		< 0.0001		0.0004		0.0001		< 0.0001		0.0003	0.0002		< 0.0001
Nickel	mg/L	0.025		< 0.01		< 0.01		< 0.01		< 0.01		< 0.01		< 0.01	< 0.01		< 0.01
Selenium	mg/L	-		< 0.001		< 0.001		< 0.001		< 0.001		< 0.001		< 0.002	< 0.001		< 0.001
Silver	mg/L	0.0001		< 0.0001		< 0.0001		< 0.0001		< 0.0001		< 0.0001		< 0.0001	< 0.0001		< 0.0001
Strontium	mg/L	-		0.33		0.271		0.436		0.291		0.249		0.35	0.255		0.316
Thallium	mg/L	-		< 0.00005		< 0.00005		< 0.00005		< 0.00005		< 0.00005		< 0.0001	< 0.00005		< 0.00005
Vanadium	mg/L	-		0.0007		0.0002		0.0123		0.0004		0.0002		< 0.0002	0.0003		0.0006
Zinc	mg/L	0.03		**0.047**		**0.059**		**0.112**		< 0.005		< 0.005		< 0.005	< 0.005		0.007
Cyanide	mg/L	0.005													< 0.005		< 0.005
Turbidity	NTU	-													0.9		17.7
Tannins & Lignins	mg/L	-													0.6		1.5

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	SW18 26-Jun-23	SW18 15-Aug-23	SW18 16-Aug-23	SW18 5-Oct-23	SW18 27-Mar-24	SW18 10-Apr-24	SW18 25-Apr-24	SW18 1-May-24	SW18 11-Jun-24	SW18 29-Jul-24	SW18 15-Aug-24	SW18 10-Oct-24	WPCP Eff 10-Feb-15	WPCP Eff 28-Apr-15	WPCP Eff 15-Jun-15
pH -Lab	pH units	6.5-8.5	8.05	7.52	7.13	8.07	8.33	8.33	8.18	8.14	7.49	7.4	8.09	7.9	7.47	7.85	7.89
Conductivity	uS/cm	-			678	897			589		753		685	687	1490	1610	1260
BOD	mg/L	-			3	<3			<3		3		<3	<3	5	< 2	< 2
COD	mg/L	-			64	52			23		48		46	33	43	10	16
Total Dissolved Solids	mg/L	-			362	534			330		398		373	382	863	865	659
Total Suspended Solids	mg/L	-			8	10			<3		3		9	<3	142	9	10
Alkalinity	mg/L	-			183	207			236		207		201	202	188	213	227
Hardness	mg/L	-			195	291			259		221		229	252	373	362	307
Ammonia	mg/L	-	0.14	0.07	0.77	0.18	0.06	<0.05	0.06	<0.05	0.1	0.13	0.17	0.31	0.84	0.4	0.07
Un-ionized Ammonia	mg/L	0.02			0.02	<0.01			<0.01		<0.01		<0.01	0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-			67.3	97.4			92		73.5		77.5	85.1	118	123	106
Chloride	mg/L	-			103	168			42.7		110		93.4	92.9	288	326	205
DOC	mg/L	-			10.4	10.6			5.9		10.6		15.2	12.3	6.2	2.6	1.3
Fluoride	mg/L	-			<0.1	<0.1			<0.1		<0.1		<0.1	<0.1	0.1	0.2	< 0.1
Iron	mg/L	0.3			**1.76**	**0.648**			0.05		0.21		**0.866**	0.085	0.237	0.076	0.052
Magnesium	mg/L	-			6.43	11.7			7.12		9.03		8.46	9.42	19.1	13.3	9.97
Manganese	mg/L	-			0.82	0.24			0.009		0.24		0.476	0.022	0.069	0.035	0.008
Nitrate	mg/L	-			0.09	<0.05			0.08		<0.05		0.07	<0.05	4.3	9.1	8.8
Nitrite	mg/L	-			<0.05	<0.05			<0.05		<0.05		0.05	<0.05	5.5	< 0.1	< 0.1
TKN	mg/L	-			1.4	1.7			0.5		1.2		1.7	1.1	2.8	1.2	0.9
Sodium	mg/L	-			53.4	82.8			28.4		70.4		57.6	53.5	204	168	109
Sulphate	mg/L	-			4	29			14		4		7	11	67	58	47
Phenols	mg/L	0.001			**0.004**	<0.001			<0.001		<0.001		0.001	<0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	0.03			**0.1**	**0.09**			0.03		**0.05**		**0.2**	0.02	**0.3**	**0.05**	**0.05**
Potassium	mg/L	-			14.1	20.3			3.3		6		6.5	8.1	15.4	8.7	5.9
Aluminum	mg/L	0.075			0.03	**0.11**			0.04		0.02		0.07	0.03	**2.4**	**1.27**	**0.87**
Antimony	mg/L	-			0.0001	0.0004			0.0003		0.0002		0.0004	0.0002	< 0.0001	0.0002	0.0004
Arsenic	mg/L	0.1			0.0007	0.0005			0.0002		0.0005		0.0005	0.0003	< 0.0001	0.0002	0.0005
Barium	mg/L	-			0.06	0.057			0.034		0.04		0.048	0.045	0.052	0.063	0.052
Beryillium	mg/L	1.1			<0.0001	<0.0001			<0.0001		<0.0001		<0.0001	<0.0001	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2			0.068	**0.23**			0.026		0.071		0.099	0.084	0.158	0.078	0.083
Cadmium	mg/L	0.0002			<0.000015	<0.000015			<0.000015		<0.000015		<0.000015	<0.000015	0.00002	0.00004	**0.00025**
Chromium	mg/L	0.1			<0.001	<0.001			<0.001		<0.001		<0.001	<0.001	0.0007	< 0.0002	< 0.0002
Cobalt	mg/L	0.0006			0.0003	0.0004			0.0002		0.0002		0.0002	0.0002	< 0.005	< 0.005	< 0.005
Copper	mg/L	0.005			0.0006	0.0007			0.0009		0.0005		0.0005	0.0005	**0.0102**	0.0044	0.0033
Lead	mg/L	0.025			0.00006	0.00018			0.00005		<0.00002		0.00008	<0.00002	0.0012	0.00056	0.00047
Mercury	mg/L	-			<0.00002	<0.00002			<0.00002		<0.00002		<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04			<0.0001	0.0003			0.0002		<0.0001		<0.0001	0.0003	0.0013	0.0004	0.0009
Nickel	mg/L	0.025			0.0009	0.0009			0.0006		0.0008		0.0006	0.0006	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-			<0.001	<0.001			<0.001		<0.001		<0.001	<0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001			<0.0001	<0.0001			0.0001		<0.0001		**0.0003**	<0.0001	**0.00053**	< 0.00002	**0.00024**
Strontium	mg/L	-			0.224	0.32			0.274		0.269		0.285	0.3	0.41	0.396	0.339
Thallium	mg/L	-			<0.00005	<0.00005			<0.00005		<0.00005		<0.00005	<0.00005	< 0.00005	< 0.00005	0.00025
Vanadium	mg/L	-			0.0002	0.0006			0.0002		0.0001		0.0002	0.0002	< 0.0001	0.0001	0.0005
Zinc	mg/L	0.03			<0.005	0.016			0.008		<0.005		<0.005	<0.005	**0.105**	**0.036**	0.011
Cyanide	mg/L	0.005			<0.005	<0.005			<0.005		<0.005		<0.005	<0.005	< 0.005	< 0.005	< 0.005
Turbidity	NTU	-			6.5	1.7			1		0.8		2.8	0.8	2.3	1.3	2.5
Tannins & Lignins	mg/L	-			1.6	1.1			<0.5		1.2		1				

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary - General Water Quality

Parameter	UNITS	PWQO	WPCP Eff 19-Aug-15	WPCP Eff 18-Nov-15	WPCP Eff 26-May-16	WPCP Eff 8-Jun-16	WPCP Eff 11-Aug-16	WPCP Eff 17-Oct-16	WPCP Eff 24-Apr-17	WPCP Eff 22-Jun-17	WPCP Eff 24-Aug-17	WPCP Eff 17-Oct-17	WPCP Eff 25-Apr-18	WPCP Eff 28-Jun-18	WPCP Eff 22-Aug-18	WPCP Eff 11-Oct-18	WPCP Eff 24-Apr-19
pH -Lab	pH units	6.5-8.5	8	7.7	8.02	8.03	7.82	7.82	8.11	7.85	7.84	7.97	8.14	8.07	7.77	8.02	8.01
Conductivity	uS/cm	-	1210	1290	1430	1360	1080	1220	1630	1320	1190	1100	1580	1400	1150	1270	1600
BOD	mg/L	-	< 3	< 2	5	4	5	7	3	3	8	4	< 3	6	8	> 24	< 3
COD	mg/L	-	24	< 5	23	22	26	18	18	21	28	30	19	26	36	120	28
Total Dissolved Solids	mg/L	-	616	692	783	713	591	664	805	658	595	548	791	765	616	711	801
Total Suspended Solids	mg/L	-	11	4	9	10	3	18	8	12	5	8	12	6	13	16	10
Alkalinity	mg/L	-	190	173	218	196	162	335	251	268	217	203	230	252	200	238	226
Hardness	mg/L	-	240	300	361	282	217	353	341	315	286	269	348	282	219	292	370
Ammonia	mg/L	-	0.29	0.07	0.41	0.31	1.02	7.85	0.61	1.32	1.79	4.3	0.08	17.6	6.8	4.12	0.46
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	**0.16**	**0.03**	0.01	**0.07**	**0.18**	< 0.01	**0.35**	**0.22**	**0.07**	< 0.01
Calcium	mg/L	-	75.7	98.6	117	89	63.2	113	116	107	88.7	85.4	120	87.8	68.4	98.7	130
Chloride	mg/L	-	200	217	265	222	185	149	295	182	165	144	307	240	200	200	298
DOC	mg/L	-	1.8	3.5	3.2	4	3.9	5.8	3.8	3.8	6.7	5.6	2.3	6.8	6.5	16.4	3.5
Fluoride	mg/L	-	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	0.197	0.055	0.106	0.148	0.119	**4.45**	0.054	0.062	0.083	0.112	0.045	0.138	0.195	0.156	0.063
Magnesium	mg/L	-	12.5	13	16.8	14.4	14.5	17.3	12.7	11.4	13.2	13.4	11.7	15.1	12.4	17.1	11.4
Manganese	mg/L	-	0.075	0.016	0.065	0.043	0.065	0.575	0.033	0.036	0.068	0.054	0.031	0.086	0.068	0.088	0.032
Nitrate	mg/L	-	2.7	14.9	5.4	2.3	0.5	3.6	2.9	0.23	0.67	0.5	7.83	0.22	0.2	0.25	10.1
Nitrite	mg/L	-	0.4	< 0.1	0.8	0.6	1.2	0.4	0.7	0.22	0.45	0.63	< 0.05	0.32	0.18	0.13	0.11
TKN	mg/L	-	1.5	1.1	1.6	1.4	2.4	9.7	1.7	2.4	2.8	5.4	1.1	22.1	9.2	5.6	1.7
Sodium	mg/L	-	106	123	160	146	121	97.4	161	135	126	109	169	164	127	145	172
Sulphate	mg/L	-	85	60	53	100	90	44	46	52	57	58	38	70	67	94	45
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.016**	**0.004**	**0.004**	**0.008**	**0.005**	< 0.001	< 0.001	**0.004**	**0.002**	< 0.002
Phosphorus	mg/L	0.03	**0.09**	**0.05**	**0.12**	**0.08**	**0.05**	**0.05**	**0.09**	**0.1**	**0.07**	**0.09**	**0.1**	**0.12**	**0.13**	**0.17**	**0.1**
Potassium	mg/L	-	9.3	10.6	13	11.4	12.2	9.7	7.7	6.9	11.3	10.6	6.7	13.3	11.4	13.8	7.9
Aluminum	mg/L	0.075	**0.98**	**0.99**	**0.95**	**0.72**	**0.62**	**0.34**	**0.95**	**1.1**	**0.82**	**0.86**	**0.56**	**0.76**	**0.85**	**0.85**	**0.09**
Antimony	mg/L	-	0.0003	0.0002	0.0004	0.0003	0.0003	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0004	< 0.0005	0.0002	0.0003
Arsenic	mg/L	0.1	0.0004	0.0003	0.0004	0.0001	0.0003	0.0008	0.0012	0.0007	0.0007	0.0007	0.0005	0.0004	< 0.0005	0.0004	0.0002
Barium	mg/L	-	0.051	0.047	0.055	0.039	0.037	0.085	0.062	0.061	0.053	0.06	0.073	0.056	0.057	0.063	0.076
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.09	0.101	0.134	0.123	0.146	0.117	0.086	0.082	0.133	0.128	0.059	0.137	0.122	0.134	0.069
Cadmium	mg/L	0.0002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.000014	0.000018	< 0.000014	0.000063	0.000074	< 0.000015	< 0.000070	0.000035	0.000017
Chromium	mg/L	0.1	0.0002	< 0.0002	0.0005	0.0003	< 0.0002	0.0003	< 0.0015	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.001	0.001
Cobalt	mg/L	0.0006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	< 0.0001	0.0002	0.0003	< 0.0001	< 0.0001	0.0004	< 0.0005	0.0002	0.0002
Copper	mg/L	0.005	0.0021	0.0032	0.0038	0.0018	0.001	0.0007	0.0026	0.0023	0.0016	**0.0079**	0.0029	0.0018	0.0013	**0.0064**	0.004
Lead	mg/L	0.025	0.00031	0.00035	0.00092	0.00091	0.00037	0.00017	0.00038	0.0003	0.00026	0.00081	0.00017	0.00018	0.0005	0.0007	0.00032
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0042	0.0013	0.0008	0.0009	0.001	0.0003	0.0007	0.0038	0.0045	0.0015	0.014	0.002	0.0018	0.0014	0.0009
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	**0.00022**	< 0.00002	**0.00024**	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.271	0.336	0.381	0.312	0.243	0.386	0.351	0.349	0.284	0.26	0.358	0.322	0.278	0.328	0.378
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0003	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0004	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	< 0.0001	0.0003	< 0.0001	0.0001	< 0.0005	0.0002	0.0004
Zinc	mg/L	0.03	**0.032**	0.025	**0.052**	**0.041**	0.028	0.021	**0.304**	**0.031**	0.013	**0.095**	0.03	**0.031**	**0.033**	**0.042**	0.023
Cyanide	mg/L	0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005			
Turbidity	NTU	-	5.6	3.3	1.8	5.5		94.5	1.7	2.6	2.1	1.8	2.7	2.9	2.2	0.8	
Tannins & Lignins	mg/L	-			1.1	0.9											

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	WPCP Eff 17-Jul-19	WPCP Eff 13-Aug-19	WPCP Eff 8-Oct-19	WPCP Eff 30-Apr-20	WPCP Eff 24-Jun-20	WPCP Eff 10-Aug-20	WPCP Eff 22-Oct-20	WPCP Eff 20-Apr-21	WPCP Eff 15-Jun-21	WPCP Eff 11-Aug-21	WPCP Eff 11-Aug-21	WPCP Eff 15-Oct-21	WPCP Eff 26-Apr-22	WPCP Eff 21-Jun-22	WPCP Eff 24-Aug-22
pH -Lab	pH units	6.5-8.5	8.03	8.12	7.91	7.93	7.86	7.94	8.12	8.09	7.78	7.91	7.97	7.68	8.1	8	7.92
Conductivity	uS/cm	-	1290	1200	1130	1530	1400	1220	1260	1580	1550	1490	1480	1430	1640	1690	1370
BOD	mg/L	-	7	< 3	3	3	9	< 3	3	4	8	10	10	16	4	6	10
COD	mg/L	-	32	31	27	25	27	24	14	20	75	63	64	265	42	31	26
Total Dissolved Solids	mg/L	-	626	632	638	870	751	663	670	850	871	783	810	783	839	901	720
Total Suspended Solids	mg/L	-	9	9	7	10	10	7	8	8	23	18	18	48	11	8	9
Alkalinity	mg/L	-	200	201	189	240	201	176	212	273	304	301	302	329	266	323	246
Hardness	mg/L	-	288	253	237	333	291	277	298	373	297	263	291	303	347	367	250
Ammonia	mg/L	-	0.68	0.41	0.39	0.56	2.12	0.28	0.43	5.46	24.3	18.8	18.9	14.8	10.6	14.5	13.9
Un-ionized Ammonia	mg/L	0.02	0.02	< 0.01	0.02	< 0.01	**0.11**	< 0.01	0.02	**0.36**	**0.51**	**0.16**	**0.16**	**0.22**	**0.08**	**0.26**	**0.14**
Calcium	mg/L	-	81.3	80.2	71.8	111	91.7	85.5	95.3	124	93	81.6	90.4	94.7	116	127	78.4
Chloride	mg/L	-	195	209	217	326	260	228	227	286	248	239	242	246	290	287	251
DOC	mg/L	-	6.1	7.6	6.1	3.6	3.9	4.1	3.1	4.1	6.9	5.5	5.7	24.6	2.6	4.2	3
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	0.119	0.102	0.165	0.066	0.154	0.147	0.084	0.226	**0.378**	**0.441**	**0.401**	**0.392**	0.052	0.166	0.094
Magnesium	mg/L	-	11.9	12.8	14	13.4	15.3	15.3	14.5	15.4	15.8	14.5	15.9	16.1	13.8	15.1	13.2
Manganese	mg/L	-	0.056	0.022	0.018	0.028	0.092	0.034	0.02	0.034	0.106	0.083	0.092	0.071	0.031	0.06	0.051
Nitrate	mg/L	-	0.95	3.26	2.41	2.51	0.35	0.35	2.67	0.1	0.08	0.07	0.05	< 0.05	4.86	< 0.05	0.06
Nitrite	mg/L	-	0.22	0.19	< 0.05	0.51	0.15	0.28	0.22	0.21	< 0.05	< 0.05	< 0.05	0.11	0.16	< 0.05	0.47
TKN	mg/L	-	2	1.5	1.8	1.9	4.2	1.5	1.7	6.6	27.8	22.3	22.5	28.1	12.2	20.2	22.6
Sodium	mg/L	-	144	130	128	160	162	134	132	176	161	151	166	155	188	191	146
Sulphate	mg/L	-	59	65	68	53	82	81	54	56	89	74	72	23	47	57	47
Phenols	mg/L	0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.002	< 0.002	< 0.002	**0.003**	**0.004**	< 0.002	**0.011**	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	0.03	**0.06**	0.03	**0.1**	**0.1**	**0.12**	**0.06**	**0.1**	**0.14**	**0.53**	**0.49**	**0.56**	**2.87**	**0.09**	**0.16**	**0.1**
Potassium	mg/L	-	13.5	14.1	15.1	14.6	15.6	13.3	14.5	11.8	16.1	16.7	18.3	32	10.9	10.9	12.8
Aluminum	mg/L	0.075	**0.1**	**0.21**	**0.11**	**0.1**	**0.1**	**0.08**	**0.13**	**0.11**	**0.17**	**0.14**	**0.13**	**0.12**	**0.1**	**0.22**	**0.22**
Antimony	mg/L	-	0.0003	0.0002	0.0006	0.0004	0.0004	0.0005	0.0002	0.0003	0.0001	0.0004	0.0005	0.0005	0.0007	0.0007	0.0005
Arsenic	mg/L	0.1	0.0003	0.0003	0.0003	0.0002	0.0003	0.0003	0.0002	0.0002	0.0004	0.0004	0.0004	0.0003	0.0002	0.0003	0.0003
Barium	mg/L	-	0.049	0.04	0.039	0.05	0.059	0.059	0.054	0.09	0.073	0.068	0.075	0.065	0.064	0.075	0.046
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.14	0.157	0.16	0.101	**0.21**	**0.236**	0.134	0.127	0.177	0.148	0.163	0.166	0.115	0.15	0.165
Cadmium	mg/L	0.0002	0.000019	0.000037	0.000034	0.000018	< 0.000015	0.000037	0.000028	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000028	< 0.000015	< 0.000015	< 0.000028
Chromium	mg/L	0.1	< 0.001	< 0.001	0.002	0.001	< 0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	< 0.001	0.001	< 0.001	0.001	< 0.001
Cobalt	mg/L	0.0006	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002	0.0001	0.0002	0.0003	< 0.0002	0.0002	0.0003	< 0.0002
Copper	mg/L	0.005	0.0025	0.0021	0.004	0.0025	0.0009	0.0019	0.0024	0.0015	**0.0059**	0.0045	0.0045	**0.0083**	0.0021	0.0011	0.0008
Lead	mg/L	0.025	0.00177	0.00096	0.00107	0.00057	0.00045	0.00136	0.00098	0.0003	0.00016	0.00026	0.00037	0.00013	0.00025	0.00013	0.00036
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0034	0.008	0.0021	0.0009	0.0041	0.0117	0.0016	0.0023	0.0015	0.0012	0.0014	0.0007	0.0032	0.0022	0.004
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001	< 0.001	< 0.002
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-	0.281	0.273	0.247	0.317	0.327	0.312	0.301	0.394	0.327	0.319	0.348	0.324	0.401	0.406	0.296
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.0001
Vanadium	mg/L	-	0.0004	0.0005	0.0003	0.0002	0.0001	0.0005	0.0003	0.0002	0.0002	0.0002	0.0001	< 0.0002	0.0003	0.0001	< 0.0002
Zinc	mg/L	0.03	**0.05**	**0.048**	**0.061**	**0.033**	**0.044**	**0.058**	**0.042**	**0.032**	0.021	0.023	0.013	0.013	0.018	0.017	0.022
Cyanide	mg/L	0.005						< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Turbidity	NTU	-		1.4	4			936	30.9	2.2	4.4	1.5	2.6	1.5	1.9	3.2	124
Tannins & Lignins	mg/L	-								0.9							1.3

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary -
General Water Quality

Parameter	UNITS	PWQO	WPCP Eff 17-Oct-22	WPCP Eff 24-Apr-23	WPCP Eff 8-Jun-23	WPCP Eff 16-Aug-23	WPCP Eff 5-Oct-23	WPCP Eff 25-Apr-24	WPCP Eff 11-Jun-24	WPCP Eff (Dup) 25-Apr-24	WPCP Eff 15-Aug-24	WPCP Eff 10-Oct-24
pH -Lab	pH units	6.5-8.5	7.92	7.92	7.93	7.68	7.91	7.91	7.68	7.91	8.1	7.87
Conductivity	uS/cm	-	1380	1540	1580	1430	1300	1620	1360	1620	1280	1320
BOD	mg/L	-	4	< 3	< 3	<3	<3	<3	3	<3	<3	<3
COD	mg/L	-	36	47	20	22	26	28	30	27	30	26
Total Dissolved Solids	mg/L	-	663	800	772	803	753	896	742	905	694	760
Total Suspended Solids	mg/L	-	9	17	13	9	13	15	16	16	13	4
Alkalinity	mg/L	-	184	216	222	191	196	249	181	250	209	192
Hardness	mg/L	-	284	315	309	285	295	367	303	377	277	307
Ammonia	mg/L	-	2.41	0.08	0.19	0.88	0.46	0.1	0.19	0.08	0.11	0.29
Un-ionized Ammonia	mg/L	0.02	**0.11**	< 0.01	0.01	**0.14**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Calcium	mg/L	-	85.6	105	94.9	92	90.7	124	98	127	90	97.1
Chloride	mg/L	-	230	321	285	284	256	310	252	309	234	253
DOC	mg/L	-	1.9	2.1	2	2.6	1.2	3.1	3.6	3.2	3.6	5.1
Fluoride	mg/L	-	< 0.1	< 0.1	< 1	<0.7	<0.7	<0.1	<0.1	<0.1	<0.1	<0.1
Iron	mg/L	0.3	0.044	0.048	0.069	0.033	0.095	0.032	0.064	0.032	0.042	0.068
Magnesium	mg/L	-	16	12.5	14.2	13.4	16.6	13.8	14	14.2	12.6	15.6
Manganese	mg/L	-	0.038	0.008	0.011	0.005	0.011	0.014	0.009	0.014	0.005	0.008
Nitrate	mg/L	-	17	8.59	9	13	12.2	8.39	8.37	8.37	6.29	8.33
Nitrite	mg/L	-	1.47	< 0.05	< 0.5	<0.40	<0.40	<0.05	<0.05	<0.05	0.1	<0.05
TKN	mg/L	-	5.1	1.4	1.5	1.2	1.8	1.2	1.5	1.1	1.2	1.4
Sodium	mg/L	-	154	161	172	165	144	186	160	191	134	159
Sulphate	mg/L	-	46	61	59	58	54	63	59	63	56	61
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus	mg/L	0.03	**0.12**	**0.16**	**0.15**	**0.1**	**0.12**	**0.1**	**0.17**	**0.1**	**0.07**	**0.07**
Potassium	mg/L	-	17	9.3	14	14.5	20.6	12.2	13.7	12.6	14.3	22.2
Aluminum	mg/L	0.075	**0.1**	**2.13**	**0.11**	**1.14**	**1.49**	**2.39**	**2.49**	**2.48**	**1.98**	**1.04**
Antimony	mg/L	-	0.0006	0.0006	0.0005	0.0004	0.0007	0.0005	0.0006	0.0005	0.0005	0.0006
Arsenic	mg/L	0.1	0.0003	< 0.0005	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002
Barium	mg/L	-	0.047	0.058	0.052	0.052	0.05	0.069	0.052	0.07	0.054	0.052
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	0.2	0.167	0.159	0.175	**0.204**	**0.202**	0.123	0.155	0.128	0.113	0.141
Cadmium	mg/L	0.0002	< 0.000028	< 0.000070	0.000045	0.000034	0.000016	0.000026	0.000028	0.00003	<0.000015	0.000017
Chromium	mg/L	0.1	< 0.001	0.002	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0006	0.0002	< 0.0005	0.0002	0.0004	0.0003	0.0004	0.0004	0.0004	0.0002	0.0003
Copper	mg/L	0.005	0.0037	**0.0072**	**0.0095**	**0.0091**	**0.0097**	**0.0058**	**0.0091**	**0.0062**	**0.0067**	**0.0089**
Lead	mg/L	0.025	0.00028	0.0004	0.00079	0.00026	0.00018	0.00046	0.00026	0.0005	0.00013	0.00026
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.04	0.001	0.0011	0.0026	0.0054	0.0044	0.0014	0.0026	0.0014	0.0021	0.0033
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	0.0015	0.0011	0.0019	0.001	0.002	0.0009	0.0017
Selenium	mg/L	-	< 0.002	< 0.005	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0001	**0.0002**	<0.0001
Strontium	mg/L	-	0.32	0.346	0.327	0.328	0.32	0.388	0.32	0.399	0.301	0.319
Thallium	mg/L	-	< 0.0001	< 0.0003	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-	< 0.0002	< 0.0005	0.0003	0.0005	0.0004	0.0003	0.0003	0.0003	0.0004	0.0003
Zinc	mg/L	0.03	**0.035**	0.029	**0.055**	0.023	0.014	**0.047**	0.03	**0.048**	0.01	0.013
Cyanide	mg/L	0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Turbidity	NTU	-	3.4	5.5	4.8	2.6	3.9	3.7	4	4.4	3.1	1.9
Tannins & Lignins	mg/L	-										

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry
Summary - VOC

Parameters	Units	PWQO	Emb A 17-Jun-15	Emb A 17-Nov-15	Emb A 14-Jun-16	Emb A 12-Oct-16	Emb A 24-Apr-17	Emb A 22-Jun-17	Emb A 24-Aug-17	Emb A 17-Oct-17	Emb A 26-Jun-18	Emb A 28-Aug-18	Emb A 10-Oct-18	Emb A 25-Apr-19
1,1,1,2-Tetrachloroethane	µg/L	20												
1,1,1-Trichloroethane	µg/L	10												
1,1,2,2 Tetrachloroethane	µg/L	70												
1,1,2-Trichloroethane	µg/L	800												
1,1-Dichloroethane	µg/L	200												
1,1-Dichloroethylene	µg/L	40												
Ethylene Dibromide	µg/L	5												
1,2-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.5	< 0.5
1,2-Dichloroethane	µg/L	100	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.5	< 0.5
1,2-Dichloropropane	µg/L	0.7	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.5	< 0.5
1,3-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.5	< 0.5
1,4-Dichlorobenzene	µg/L	4	< 0.5	< 0.5	< 0.5	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.5	< 0.5
Methyl Ethyl Ketone	µg/L	400												
Methyl Isobutyl Ketone	µg/L	-												
Acetone	µg/L	-												
Benzene	µg/L	100	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	-	< 2	< 2	< 2	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 2	< 2
Bromoform	µg/L	60	< 5	< 5	< 5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 5	< 5
Bromomethane	µg/L	0.9	< 0.5	< 0.5	< 0.5	< 0.3	<0.3	<0.3	<0.3	<0.3	< 0.3	< 0.3	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	-	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chlorobenzene	µg/L	15	< 0.5	< 0.5	< 0.5	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.5	< 0.5
Chloroform	µg/L	-	< 1	< 1	< 1	**0.6**	<0.3	<0.3	<0.3	<0.3	**0.7**	< 0.3	**1**	< 1
cis 1,2-Dichloroethene	µg/L	200	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.5	< 0.5
cis 1,3-Dichloroethene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.5	< 0.5
Dibromochloromethane	µg/L	40	< 2	< 2	< 2	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 2	< 2
Dichlorodifluoromethane	µg/L	100	< 5	< 5	< 5	< 0.3	<0.3	<0.3	<0.3	<0.3	< 0.3	< 0.3	< 0.3	< 2
Ethylbenzene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	-	< 1.0	< 1.0	< 1.0	< 0.4	<0.4	<0.4	<0.4	<0.4	< 0.4	< 0.4	< 1.0	< 1.0
o-Xylene	µg/L	40	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.5	< 0.5
Toluene	µg/L	0.8	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	-												
Methylene Chloride	µg/L	700				< 0.3	<0.3	<0.3	<0.3	<0.3	< 0.3	< 0.3	< 0.06	< 5
Vinyl Chloride	µg/L	600	< 0.5	< 0.5	< 0.5	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.5	< 0.2
Trichloroethylene	µg/L	20			< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.5	< 0.5
Xylene, m,p,o-	µg/L	-												

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Surface Water Chemistry
Summary - VOC

Parameters	Units	PWQO	Emb A 18-Jul-19	Emb A 12-Aug-19	Emb B 17-Jun-15	Emb B 17-Nov-15	Emb B 14-Jun-16	Emb B 12-Oct-16	Emb B 24-Apr-17	Emb B 22-Jun-17	Emb B 24-Aug-17	Emb B 17-Oct-17	Emb B 26-Jun-18	Emb B 28-Aug-18
1,1,1,2-Tetrachloroethane	µg/L	20												
1,1,1-Trichloroethane	µg/L	10												
1,1,2,2 Tetrachloroethane	µg/L	70												
1,1,2-Trichloroethane	µg/L	800												
1,1-Dichloroethane	µg/L	200												
1,1-Dichloroethylene	µg/L	40												
Ethylene Dibromide	µg/L	5												
1,2-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5					<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
1,2-Dichloroethane	µg/L	100	< 0.5	< 0.5					<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
1,2-Dichloropropane	µg/L	0.7	< 0.5	< 0.5					<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
1,3-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5					<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	µg/L	4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2
Methyl Ethyl Ketone	µg/L	400												
Methyl Isobutyl Ketone	µg/L	-												
Acetone	µg/L	-												
Benzene	µg/L	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	-	< 2	< 2					<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
Bromoform	µg/L	60	< 5	< 5					<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
Bromomethane	µg/L	0.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.3	<0.3	<0.3	<0.3	<0.3	< 0.3	< 0.3
Carbon Tetrachloride	µg/L	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2
Chlorobenzene	µg/L	15	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2
Chloroform	µg/L	-	< 1	< 1	< 1	< 1	< 1	< 0.3	<0.3	<0.3	**1**	<0.3	< 0.3	< 0.3
cis 1,2-Dichloroethene	µg/L	200	< 0.5	< 0.5					<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
cis 1,3-Dichloroethene	µg/L	-	< 0.5	< 0.5					<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
Dibromochloromethane	µg/L	40	< 2	< 2					<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
Dichlorodifluoromethane	µg/L	100	< 2	< 2	< 5	< 5	< 5	< 0.3	<0.3	<0.3	**1**	<0.3	< 0.3	< 0.3
Ethylbenzene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	<0.4	<0.4	<0.4	<0.4	< 0.4	< 0.4
o-Xylene	µg/L	40	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
Toluene	µg/L	0.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	-												
Methylene Chloride	µg/L	700	< 5	< 5				< 0.3	<0.3	<0.3	**1**	<0.3	< 0.3	< 0.3
Vinyl Chloride	µg/L	600	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2
Trichloroethylene	µg/L	20	< 0.5	< 0.5			< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
Xylene, m,p,o-	µg/L	-												

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Surface Water Chemistry
Summary - VOC

Parameters	Units	PWQO	Emb B 10-Oct-18	Emb B 18-Jul-19	Emb B 12-Aug-19	Emb C 17-Jun-15	Emb C 17-Nov-15	Emb C 14-Jun-16	Emb C 12-Oct-16	Emb C 24-Apr-17	Emb C 22-Jun-17	Emb C 24-Aug-17	Emb C 17-Oct-17	Emb C 26-Jun-18
1,1,1,2-Tetrachloroethane	µg/L	20												
1,1,1-Trichloroethane	µg/L	10												
1,1,2,2 Tetrachloroethane	µg/L	70												
1,1,2-Trichloroethane	µg/L	800												
1,1-Dichloroethane	µg/L	200												
1,1-Dichloroethylene	µg/L	40												
Ethylene Dibromide	µg/L	5												
1,2-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1
1,2-Dichloroethane	µg/L	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1
1,2-Dichloropropane	µg/L	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1
1,3-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1
1,4-Dichlorobenzene	µg/L	4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2
Methyl Ethyl Ketone	µg/L	400												
Methyl Isobutyl Ketone	µg/L	-												
Acetone	µg/L	-												
Benzene	µg/L	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Bromodichloromethane	µg/L	-	< 2	< 2	< 2	< 2	< 2	< 2	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1
Bromoform	µg/L	60	< 5	< 5	< 5	< 5	< 5	< 5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1
Bromomethane	µg/L	0.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.3	<0.3	<0.3	<0.3	<0.3	< 0.3
Carbon Tetrachloride	µg/L	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2
Chlorobenzene	µg/L	15	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2
Chloroform	µg/L	-	< 1	< 1	**1**	< 1	< 1	< 1	< 0.3	<0.3	<0.3	<0.3	<0.3	< 0.3
cis 1,2-Dichloroethene	µg/L	200	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1
cis 1,3-Dichloroethene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1
Dibromochloromethane	µg/L	40	< 2	< 2	< 2	< 2	< 2	< 2	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1
Dichlorodifluoromethane	µg/L	100	< 0.3	< 2	< 2	< 5	< 5	< 5	< 0.3	<0.3	<0.3	<0.3	<0.3	< 0.3
Ethylbenzene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
m & p-Xylene	µg/L	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	<0.4	<0.4	<0.4	<0.4	< 0.4
o-Xylene	µg/L	40	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1
Toluene	µg/L	0.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	-												
Methylene Chloride	µg/L	700	< 0.06	< 5	< 5				< 0.3	<0.3	<0.3	<0.3	<0.3	< 0.3
Vinyl Chloride	µg/L	600	< 0.5	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2
Trichloroethylene	µg/L	20	< 0.5	< 0.5	< 0.5			< 0.5	< 0.1	<0.1	<0.1	<0.1	<0.1	< 0.1
Xylene, m,p,o-	µg/L	-												

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Surface Water Chemistry
Summary - VOC

Parameters	Units	PWQO	Emb C 28-Aug-18	Emb C 10-Oct-18	Emb C 25-Apr-19	Emb C 18-Jul-19	Emb C 12-Aug-19	Scg-Down 17-Jun-15	Scg-Down 17-Nov-15	Scg-Down 24-Apr-17	Scg-Down 24-Aug-17	Scg-Down 17-Oct-17	Scg-Down 28-Aug-18	Scg-Down 25-Apr-19
1,1,1,2-Tetrachloroethane	µg/L	20												
1,1,1-Trichloroethane	µg/L	10												
1,1,2,2 Tetrachloroethane	µg/L	70												
1,1,2-Trichloroethane	µg/L	800												
1,1-Dichloroethane	µg/L	200												
1,1-Dichloroethylene	µg/L	40												
Ethylene Dibromide	µg/L	5												
1,2-Dichlorobenzene	µg/L	2.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	<0.1	<0.1	< 0.1	< 0.5
1,2-Dichloroethane	µg/L	100	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	<0.1	<0.1	< 0.1	< 0.5
1,2-Dichloropropane	µg/L	0.7	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	<0.1	<0.1	< 0.1	< 0.5
1,3-Dichlorobenzene	µg/L	2.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.2	<0.1	<0.1	< 0.1	< 0.5
1,4-Dichlorobenzene	µg/L	4	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.2	<0.2	<0.2	< 0.2	< 0.5
Methyl Ethyl Ketone	µg/L	400												
Methyl Isobutyl Ketone	µg/L	-												
Acetone	µg/L	-												
Benzene	µg/L	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	-	< 0.1	< 2	< 2	< 2	< 2	< 2	< 2	<0.2	<0.1	<0.1	< 0.1	< 2
Bromoform	µg/L	60	< 0.1	< 5	< 5	< 5	< 5	< 5	< 5	<0.1	<0.1	<0.1	< 0.1	< 5
Bromomethane	µg/L	0.9	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.3	<0.3	<0.3	< 0.3	< 0.5
Carbon Tetrachloride	µg/L	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2
Chlorobenzene	µg/L	15	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.2	<0.2	<0.2	< 0.2	< 0.5
Chloroform	µg/L	-	**0.8**	< 1	< 1	< 1	< 1	< 1	< 1	<0.3	<0.3	<0.3	< 0.3	< 1
cis 1,2-Dichloroethene	µg/L	200	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	<0.1	<0.1	< 0.1	< 0.5
cis 1,3-Dichloroethene	µg/L	-	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	<0.1	<0.1	< 0.1	< 0.5
Dibromochloromethane	µg/L	40	< 0.1	< 2	< 2	< 2	< 2	< 2	< 2	<0.1	<0.1	<0.1	< 0.1	< 2
Dichlorodifluoromethane	µg/L	100	< 0.3	< 0.3	< 2	< 2	< 2	< 5	< 5	<0.3	<0.3	<0.3	< 0.3	< 2
Ethylbenzene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	-	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<0.4	<0.4	<0.4	< 0.4	< 1.0
o-Xylene	µg/L	40	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	<0.1	<0.1	< 0.1	< 0.5
Toluene	µg/L	0.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	-												
Methylene Chloride	µg/L	700	< 0.3	< 0.06	< 5	< 5	< 5			<0.3	<0.3	<0.3	< 0.3	< 5
Vinyl Chloride	µg/L	600	< 0.2	< 0.5	< 0.2	< 0.2	< 0.2	< 0.5	< 0.5	<0.2	<0.2	<0.2	< 0.2	< 0.2
Trichloroethylene	µg/L	20	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5			<0.1	<0.1	<0.1	< 0.1	< 0.5
Xylene, m,p,o-	µg/L	-												

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Surface Water Chemistry
Summary - VOC

Parameters	Units	PWQO	Scg-Down 12-Aug-19	Scg-Down 26-Apr-21	Scg-Down 15-Jun-21	Scg-Down 10-Aug-21	Scg-Down 12-Oct-21	Scg-Down 24-Apr-23	Scg-Down 5-Oct-23	Scg-Up 17-Jun-15	Scg-Up 17-Nov-15	Scg-Up 24-Apr-17	Scg-Up 24-Aug-17	Scg-Up 28-Aug-18
1,1,1,2-Tetrachloroethane	µg/L	20		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5					
1,1,1-Trichloroethane	µg/L	10		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5					
1,1,2,2 Tetrachloroethane	µg/L	70		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5					
1,1,2-Trichloroethane	µg/L	800		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5					
1,1-Dichloroethane	µg/L	200		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5					
1,1-Dichloroethylene	µg/L	40		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5					
Ethylene Dibromide	µg/L	5		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2					
1,2-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5			<0.1	<0.2	< 0.1
1,2-Dichloroethane	µg/L	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5			<0.1	<0.1	< 0.1
1,2-Dichloropropane	µg/L	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5			<0.1	<0.3	< 0.1
1,3-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5			<0.1	<0.4	< 0.1
1,4-Dichlorobenzene	µg/L	4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	< 0.5	<0.2	<0.2	< 0.2
Methyl Ethyl Ketone	µg/L	400		< 20	< 20	< 20	< 20	< 20	<20					
Methyl Isobutyl Ketone	µg/L	-		< 20	< 20	< 20	< 20	< 20	<20					
Acetone	µg/L	-		< 30	< 30	< 30	< 30	< 30	<30					
Benzene	µg/L	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Bromodichloromethane	µg/L	-	< 2	< 2	< 2	< 2	< 2	< 2	<2			<0.1	<0.4	< 0.1
Bromoform	µg/L	60	< 5	< 5	< 5	< 5	< 5	< 5	<5			<0.1	<0.3	< 0.1
Bromomethane	µg/L	0.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	< 0.5	<0.3	<0.3	< 0.3
Carbon Tetrachloride	µg/L	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	<0.2	<0.2	< 0.2
Chlorobenzene	µg/L	15	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	< 0.5	<0.2	<0.2	< 0.2
Chloroform	µg/L	-	< 1	< 1	< 1	< 1	< 1	< 1	<1	< 1	< 1	<0.3	<0.3	< 0.3
cis 1,2-Dichloroethene	µg/L	200	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5			<0.1	<0.3	< 0.1
cis 1,3-Dichloroethene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5			<0.1	<0.3	< 0.1
Dibromochloromethane	µg/L	40	< 2	< 2	< 2	< 2	< 2	< 2	<2			<0.1	<0.3	< 0.1
Dichlorodifluoromethane	µg/L	100	< 2	< 5	< 5	< 5	< 5			< 5	< 5	<0.3	<0.3	< 0.3
Ethylbenzene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
m & p-Xylene	µg/L	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	< 1.0	< 1.0	<0.4	<0.4	< 0.4
o-Xylene	µg/L	40	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	< 0.5	<0.1	<0.1	< 0.1
Toluene	µg/L	0.8	< 0.5	< 0.5	< 0.5	< 0.5	**0.8**	< 0.5	<0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	-		< 2	< 2	< 2	< 2	< 2	<2					
Methylene Chloride	µg/L	700	< 5					< 5	<5			<0.3	<0.3	< 0.3
Vinyl Chloride	µg/L	600	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.5	< 0.5	<0.2	<0.2	< 0.2
Trichloroethylene	µg/L	20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5			<0.1	<0.1	< 0.1
Xylene, m,p,o-	µg/L	-		< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1					

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Surface Water Chemistry
Summary - VOC

Parameters	Units	PWQO	Scg-Up 25-Apr-19	Scg-Up 25-Apr-19	Scg-Up 12-Aug-19	Scg-Up 26-Apr-21	Scg-Up 15-Jun-21	Scg-Up 10-Aug-21	Scg-Up 12-Oct-21	Scg-Up 24-Apr-23	Scg-Up 16-Aug-23	Scg-Up 5-Oct-23	SW3 28-Apr-15	SW3 10-Jun-15
1,1,1,2-Tetrachloroethane	µg/L	20				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5		
1,1,1-Trichloroethane	µg/L	10				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5		
1,1,2,2 Tetrachloroethane	µg/L	70				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5		
1,1,2-Trichloroethane	µg/L	800				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5		
1,1-Dichloroethane	µg/L	200				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5		
1,1-Dichloroethylene	µg/L	40				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5		
Ethylene Dibromide	µg/L	5				< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2		
1,2-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
1,2-Dichloroethane	µg/L	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
1,2-Dichloropropane	µg/L	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
1,3-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
1,4-Dichlorobenzene	µg/L	4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Methyl Ethyl Ketone	µg/L	400				< 20	< 20	< 20	< 20	< 20	<20	<20		
Methyl Isobutyl Ketone	µg/L	-				< 20	< 20	< 20	< 20	< 20	<20	<20		
Acetone	µg/L	-				< 30	< 30	< 30	< 30	< 30	<30	<30		
Benzene	µg/L	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	< 2	< 2
Bromoform	µg/L	60	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	<5	<5	< 5	< 5
Bromomethane	µg/L	0.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	< 0.2	< 0.2
Chlorobenzene	µg/L	15	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Chloroform	µg/L	-	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	<1	<1	< 1	< 1
cis 1,2-Dichloroethene	µg/L	200	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
cis 1,3-Dichloroethene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Dibromochloromethane	µg/L	40	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	< 2	< 2
Dichlorodifluoromethane	µg/L	100	< 2	< 2	< 2	< 5	< 5	< 5	< 5				< 5	< 5
Ethylbenzene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	< 1.0	< 1.0
o-Xylene	µg/L	40	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Toluene	µg/L	0.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.6**	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	-				< 2	< 2	< 2	< 2	< 2	<2	<2		
Methylene Chloride	µg/L	700	< 5	< 5	< 5					< 5	<5	<5		
Vinyl Chloride	µg/L	600	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	< 0.5	< 0.5
Trichloroethylene	µg/L	20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5		
Xylene, m,p,o-	µg/L	-				< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1		

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Surface Water Chemistry
Summary - VOC

Parameters	Units	PWQO	SW3 17-Nov-15	SW3 24-Apr-17	SW3 17-Oct-17	SW3 24-Apr-19	SW3 20-Apr-21	SW3 15-Jun-21	SW3 10-Aug-21	SW3 15-Oct-21	SW3 24-Apr-23	SW3 16-Aug-23	SW3 19-Oct-23	SW13 11-Jun-15
1,1,1,2-Tetrachloroethane	µg/L	20					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	
1,1,1-Trichloroethane	µg/L	10					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	
1,1,2,2 Tetrachloroethane	µg/L	70					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	
1,1,2-Trichloroethane	µg/L	800					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	
1,1-Dichloroethane	µg/L	200					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	
1,1-Dichloroethylene	µg/L	40					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	
Ethylene Dibromide	µg/L	5					< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	
1,2-Dichlorobenzene	µg/L	2.5	< 0.5	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
1,2-Dichloroethane	µg/L	100	< 0.5	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
1,2-Dichloropropane	µg/L	0.7	< 0.5	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
1,3-Dichlorobenzene	µg/L	2.5	< 0.5	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
1,4-Dichlorobenzene	µg/L	4	< 0.5	<0.2	<0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Methyl Ethyl Ketone	µg/L	400					< 20	< 20	< 20	< 20	< 20	<20	<20	
Methyl Isobutyl Ketone	µg/L	-					< 20	< 20	< 20	< 20	< 20	<20	<20	
Acetone	µg/L	-					< 30	< 30	< 30	< 30	< 30	<30	<30	
Benzene	µg/L	100	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Bromodichloromethane	µg/L	-	< 2	<0.1	<0.1	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	< 2
Bromoform	µg/L	60	< 5	<0.1	<0.1	< 5	< 5	< 5	< 5	< 5	< 5	<5	<5	< 5
Bromomethane	µg/L	0.9	< 0.5	<0.3	<0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Carbon Tetrachloride	µg/L	-	< 0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	< 0.2
Chlorobenzene	µg/L	15	< 0.5	<0.2	<0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Chloroform	µg/L	-	< 1	<0.3	<0.3	< 1	< 1	< 1	< 1	< 1	< 1	<1	<1	**2**
cis 1,2-Dichloroethene	µg/L	200	< 0.5	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
cis 1,3-Dichloroethene	µg/L	-	< 0.5	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Dibromochloromethane	µg/L	40	< 2	<0.1	<0.1	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	< 2
Dichlorodifluoromethane	µg/L	100	< 5	<0.3	<0.3	< 0.2	< 5	< 5	< 5	< 5				< 5
Ethylbenzene	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
m & p-Xylene	µg/L	-	< 1.0	<0.4	<0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	< 1.0
o-Xylene	µg/L	40	< 0.5	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Toluene	µg/L	0.8	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	-					< 2	< 2	< 2	< 2	< 2	<2	<2	
Methylene Chloride	µg/L	700		<0.3	<0.3	< 5					< 5	<5	<5	
Vinyl Chloride	µg/L	600	< 0.5	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	< 0.5
Trichloroethylene	µg/L	20		<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	
Xylene, m,p,o-	µg/L	-					< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1	<1.1	

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Surface Water Chemistry
Summary - VOC

Parameters	Units	PWQO	SW13 18-Nov-15	SW13 24-Apr-17	SW13 22-Jun-17	SW13 24-Aug-17	SW13 17-Oct-17	SW13 24-Apr-19	SW13 16-Oct-19	SW13 20-Apr-21	SW13 24-Apr-23	SW14 28-Apr-15	SW14 11-Jun-15	SW14 17-Nov-15
1,1,1,2-Tetrachloroethane	µg/L	20								< 0.5	< 0.5			
1,1,1-Trichloroethane	µg/L	10								< 0.5	< 0.5			
1,1,2,2 Tetrachloroethane	µg/L	70								< 0.5	< 0.5			
1,1,2-Trichloroethane	µg/L	800								< 0.5	< 0.5			
1,1-Dichloroethane	µg/L	200								< 0.5	< 0.5			
1,1-Dichloroethylene	µg/L	40								< 0.5	< 0.5			
Ethylene Dibromide	µg/L	5								< 0.2	< 0.2			
1,2-Dichlorobenzene	µg/L	2.5	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane	µg/L	100	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloropropane	µg/L	0.7	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3-Dichlorobenzene	µg/L	2.5	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene	µg/L	4	< 0.5	<0.2	<0.2	<0.2	<0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl Ethyl Ketone	µg/L	400								< 20	< 20			
Methyl Isobutyl Ketone	µg/L	-								< 20	< 20			
Acetone	µg/L	-								< 30	< 30			
Benzene	µg/L	100	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	-	< 2	<0.1	<0.1	<0.1	<0.1	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Bromoform	µg/L	60	< 5	<0.1	<0.1	<0.1	<0.1	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane	µg/L	0.9	< 0.5	<0.3	<0.3	<0.3	<0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	-	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chlorobenzene	µg/L	15	< 0.5	<0.2	<0.2	<0.2	<0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	µg/L	-	< 1	<0.3	<0.3	<0.3	<0.3	< 1	< 1	< 1	**1**	< 1	< 1	< 1
cis 1,2-Dichloroethene	µg/L	200	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis 1,3-Dichloroethene	µg/L	-	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	µg/L	40	< 2	<0.1	<0.1	<0.1	<0.1	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Dichlorodifluoromethane	µg/L	100	< 5	<0.3	<0.3	<0.3	<0.3	< 0.2	< 2	< 5		< 5	< 5	< 5
Ethylbenzene	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	-	< 1.0	<0.4	<0.4	<0.4	<0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	40	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	0.8	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	-								< 2	< 2			
Methylene Chloride	µg/L	700		<0.3	<0.3	<0.3	<0.3	< 5	< 5		< 5			
Vinyl Chloride	µg/L	600	< 0.5	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5
Trichloroethylene	µg/L	20		<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5			
Xylene, m,p,o-	µg/L	-								< 1.1	< 1.1			

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Surface Water Chemistry
Summary - VOC

Parameters	Units	PWQO	SW14 24-Apr-17	SW14 23-May-17	SW14 24-Aug-17	SW14 17-Oct-17	SW14 24-Apr-19	SW14 16-Oct-19	SW14 20-Apr-21	SW14 15-Oct-21	SW14 24-Apr-23	SW14 16-Aug-23	SW14 19-Oct-23	SW18 28-Apr-15
1,1,1,2-Tetrachloroethane	µg/L	20							< 0.5	< 0.5	< 0.5	<0.5	<0.5	
1,1,1-Trichloroethane	µg/L	10							< 0.5	< 0.5	< 0.5	<0.5	<0.5	
1,1,2,2 Tetrachloroethane	µg/L	70							< 0.5	< 0.5	< 0.5	<0.5	<0.5	
1,1,2-Trichloroethane	µg/L	800							< 0.5	< 0.5	< 0.5	<0.5	<0.5	
1,1-Dichloroethane	µg/L	200							< 0.5	< 0.5	< 0.5	<0.5	<0.5	
1,1-Dichloroethylene	µg/L	40							< 0.5	< 0.5	< 0.5	<0.5	<0.5	
Ethylene Dibromide	µg/L	5							< 0.2	< 0.2	< 0.2	<0.2	<0.2	
1,2-Dichlorobenzene	µg/L	2.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
1,2-Dichloroethane	µg/L	100	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
1,2-Dichloropropane	µg/L	0.7	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
1,3-Dichlorobenzene	µg/L	2.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
1,4-Dichlorobenzene	µg/L	4	<0.2	<0.2	<0.2	<0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Methyl Ethyl Ketone	µg/L	400							< 20	< 20	< 20	<20	<20	
Methyl Isobutyl Ketone	µg/L	-							< 20	< 20	< 20	<20	<20	
Acetone	µg/L	-							< 30	< 30	< 30	<30	<30	
Benzene	µg/L	100	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Bromodichloromethane	µg/L	-	<0.1	<0.1	<0.1	<0.1	< 2	< 2	< 2	< 2	< 2	<2	<2	< 2
Bromoform	µg/L	60	<0.1	<0.1	<0.1	<0.1	< 5	< 5	< 5	< 5	< 5	<5	<5	< 5
Bromomethane	µg/L	0.9	<0.3	<0.3	<0.3	<0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Carbon Tetrachloride	µg/L	-	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	< 0.2
Chlorobenzene	µg/L	15	<0.2	<0.2	<0.2	<0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Chloroform	µg/L	-	<0.3	<0.3	<0.3	<0.3	< 1	< 1	< 1	< 1	< 1	<1	<1	< 1
cis 1,2-Dichloroethene	µg/L	200	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
cis 1,3-Dichloroethene	µg/L	-	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Dibromochloromethane	µg/L	40	<0.1	<0.1	<0.1	<0.1	< 2	< 2	< 2	< 2	< 2	<2	<2	< 2
Dichlorodifluoromethane	µg/L	100	<0.3	<0.3	<0.3	<0.3	< 0.2	< 2	< 5	< 5				< 5
Ethylbenzene	µg/L	-	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
m & p-Xylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	< 1.0
o-Xylene	µg/L	40	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Toluene	µg/L	0.8	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	-							< 2	< 2	< 2	<2	<2	
Methylene Chloride	µg/L	700	<0.3	<0.3	<0.3	<0.3	< 5	< 5			< 5	<5	<5	
Vinyl Chloride	µg/L	600	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	< 0.5
Trichloroethylene	µg/L	20	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	
Xylene, m,p,o-	µg/L	-							< 1.1	< 1.1	< 1.1	<1.1	<1.1	

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Surface Water Chemistry
Summary - VOC

Parameters	Units	PWQO	SW18 11-Jun-15	SW18 17-Nov-15	SW18 24-Apr-17	SW18 23-May-17	SW18 24-Aug-17	SW18 17-Oct-17	SW18 24-Apr-19	SW18 20-Apr-21	SW18 15-Jun-21	SW18 10-Aug-21	SW18 15-Oct-21	SW18 24-Apr-23
1,1,1,2-Tetrachloroethane	µg/L	20								< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	µg/L	10								< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2,2 Tetrachloroethane	µg/L	70								< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	µg/L	800								< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethane	µg/L	200								< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethylene	µg/L	40								< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylene Dibromide	µg/L	5								< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane	µg/L	100	< 0.5	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	**1**	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloropropane	µg/L	0.7	< 0.5	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene	µg/L	4	< 0.5	< 0.5	<0.2	<0.2	<0.2	<0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl Ethyl Ketone	µg/L	400								< 20	< 20	< 20	< 20	< 20
Methyl Isobutyl Ketone	µg/L	-								< 20	< 20	< 20	< 20	< 20
Acetone	µg/L	-								< 30	< 30	< 30	< 30	< 30
Benzene	µg/L	100	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	-	< 2	< 2	<0.1	<0.1	<0.1	<0.1	< 2	< 2	< 2	< 2	< 2	< 2
Bromoform	µg/L	60	< 5	< 5	<0.1	<0.1	<0.1	<0.1	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane	µg/L	0.9	< 0.5	< 0.5	<0.3	<0.3	<0.3	<0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	-	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chlorobenzene	µg/L	15	< 0.5	< 0.5	<0.2	<0.2	<0.2	<0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	µg/L	-	< 1	< 1	<0.3	<0.3	<0.3	<0.3	< 1	< 1	< 1	< 1	< 1	< 1
cis 1,2-Dichloroethene	µg/L	200	< 0.5	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis 1,3-Dichloroethene	µg/L	-	< 0.5	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	µg/L	40	< 2	< 2	<0.1	<0.1	<0.1	<0.1	< 2	< 2	< 2	< 2	< 2	< 2
Dichlorodifluoromethane	µg/L	100	< 5	< 5	<0.3	<0.3	<0.3	<0.3	< 0.2	< 5	< 5	< 5	< 5	
Ethylbenzene	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	-	< 1.0	< 1.0	<0.4	<0.4	<0.4	<0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	40	< 0.5	< 0.5	<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	0.8	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether	µg/L	-								< 2	< 2	< 2	< 2	< 2
Methylene Chloride	µg/L	700			<0.3	<0.3	<0.3	<0.3	< 5					< 5
Vinyl Chloride	µg/L	600	< 0.5	< 0.5	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene	µg/L	20			<0.1	<0.1	<0.1	<0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylene, m,p,o-	µg/L	-								< 1.1	< 1.1	< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Surface Water Chemistry
Summary - VOC

Parameters	Units	PWQO	SW18 16-Aug-23	SW18 19-Oct-23	WPCP Eff 10-Feb-15	WPCP Eff 28-Apr-15	WPCP Eff 19-Aug-15	WPCP Eff 18-Nov-15	WPCP Eff 26-May-16	WPCP Eff 8-Jun-16	WPCP Eff 11-Aug-16	WPCP Eff 17-Oct-16	WPCP Eff 24-Apr-17	WPCP Eff 22-Jun-17
1,1,1,2-Tetrachloroethane	µg/L	20	<0.5	<0.5										
1,1,1-Trichloroethane	µg/L	10	<0.5	<0.5										
1,1,2,2 Tetrachloroethane	µg/L	70	<0.5	<0.5										
1,1,2-Trichloroethane	µg/L	800	<0.5	<0.5										
1,1-Dichloroethane	µg/L	200	<0.5	<0.5										
1,1-Dichloroethylene	µg/L	40	<0.5	<0.5										
Ethylene Dibromide	µg/L	5	<0.2	<0.2										
1,2-Dichlorobenzene	µg/L	2.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.1	<0.1	<0.1
1,2-Dichloroethane	µg/L	100	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.1	<0.1	<0.1
1,2-Dichloropropane	µg/L	0.7	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.1	<0.1	<0.1
1,3-Dichlorobenzene	µg/L	2.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.1	<0.1	<0.1
1,4-Dichlorobenzene	µg/L	4	<0.5	<0.5	< 0.5	**0.9**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.2	< 0.2	<0.2	**0.3**
Methyl Ethyl Ketone	µg/L	400	<20	<20										
Methyl Isobutyl Ketone	µg/L	-	<20	<20										
Acetone	µg/L	-	<30	<30										
Benzene	µg/L	100	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Bromodichloromethane	µg/L	-	<2	<2	< 2	< 2	< 2	< 2	< 2	< 2	**0.1**	< 0.1	**0.5**	**0.2**
Bromoform	µg/L	60	<5	<5	< 5	< 5	< 5	< 5	< 5	< 5	< 0.1	< 0.1	<0.1	<0.1
Bromomethane	µg/L	0.9	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.3	< 0.3	<0.3	<0.3
Carbon Tetrachloride	µg/L	-	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2
Chlorobenzene	µg/L	15	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.2	< 0.2	<0.2	<0.2
Chloroform	µg/L	-	<1	<1	**3**	< 1	**3**	**1**	**2**	**2**	**1.3**	**0.4**	**1.5**	**1.3**
cis 1,2-Dichloroethene	µg/L	200	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.1	<0.1	<0.1
cis 1,3-Dichloroethene	µg/L	-	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.1	<0.1	<0.1
Dibromochloromethane	µg/L	40	<2	<2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.1	< 0.1	<0.1	<0.1
Dichlorodifluoromethane	µg/L	100			< 5	< 5	< 5	< 5	< 5	< 5	< 0.3	< 0.3	<0.3	<0.3
Ethylbenzene	µg/L	-	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
m & p-Xylene	µg/L	-	<1	<1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 0.4	<0.4	<0.4
o-Xylene	µg/L	40	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 0.1	<0.1	<0.1
Toluene	µg/L	0.8	**3**	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5
Methyl tert-Butyl Ether	µg/L	-	<2	<2										
Methylene Chloride	µg/L	700	<5	<5							< 0.3	< 0.3	<0.3	<0.3
Vinyl Chloride	µg/L	600	<0.2	<0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.2	< 0.2	<0.2	<0.2
Trichloroethylene	µg/L	20	<0.5	<0.5					< 0.5	< 0.5	**0.8**	< 0.1	<0.1	<0.1
Xylene, m,p,o-	µg/L	-	<1.1	<1.1										

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Surface Water Chemistry
Summary - VOC

Parameters	Units	PWQO	WPCP Eff 24-Aug-17	WPCP Eff 17-Oct-17	WPCP Eff 25-Apr-18	WPCP Eff 28-Jun-18	WPCP Eff 22-Aug-18	WPCP Eff 11-Oct-18	WPCP Eff 24-Apr-19	WPCP Eff 17-Jul-19	WPCP Eff 13-Aug-19	WPCP Eff 20-Apr-21	WPCP Eff 15-Jun-21	WPCP Eff 10-Aug-21
1,1,1,2-Tetrachloroethane	µg/L	20										< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	µg/L	10										< 0.5	< 0.5	< 0.5
1,1,2,2 Tetrachloroethane	µg/L	70										< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	µg/L	800										< 0.5	< 0.5	< 0.5
1,1-Dichloroethane	µg/L	200										< 0.5	< 0.5	< 0.5
1,1-Dichloroethylene	µg/L	40										< 0.5	< 0.5	< 0.5
Ethylene Dibromide	µg/L	5										< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	µg/L	2.5	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane	µg/L	100	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloropropane	µg/L	0.7	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3-Dichlorobenzene	µg/L	2.5	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene	µg/L	4	<0.2	**0.5**	< 0.2	< 0.2	**0.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl Ethyl Ketone	µg/L	400										< 20	< 20	< 20
Methyl Isobutyl Ketone	µg/L	-										< 20	< 20	< 20
Acetone	µg/L	-										< 30	**80**	**50**
Benzene	µg/L	100	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	-	<0.1	<0.1	< 0.1	< 0.1	**0.1**	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Bromoform	µg/L	60	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane	µg/L	0.9	<0.3	<0.3	< 0.3	< 0.3	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	-	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chlorobenzene	µg/L	15	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	µg/L	-	**1**	**1.3**	**0.4**	**1.9**	**1.6**	**3**	**1**	**1**	**2**	< 1	**2**	**3**
cis 1,2-Dichloroethene	µg/L	200	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis 1,3-Dichloroethene	µg/L	-	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	µg/L	40	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Dichlorodifluoromethane	µg/L	100	<0.3	<0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.2	< 2	< 2	< 5	< 5	< 5
Ethylbenzene	µg/L	-	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m & p-Xylene	µg/L	-	<0.4	<0.4	< 0.4	< 0.4	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	40	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	0.8	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.5**	< 0.5
Methyl tert-Butyl Ether	µg/L	-										< 2	< 2	< 2
Methylene Chloride	µg/L	700	<0.3	<0.3		< 0.3	< 0.3	< 0.06	< 5	< 5	< 5			
Vinyl Chloride	µg/L	600	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene	µg/L	20	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylene, m,p,o-	µg/L	-										< 1.1	< 1.1	< 1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Surface Water Chemistry
Summary - VOC

Parameters	Units	PWQO	WPCP Eff 10-Aug-21	WPCP Eff 15-Oct-21	WPCP Eff 26-Apr-22	WPCP Eff 24-Apr-23	WPCP Eff 5-Oct-23
1,1,1,2-Tetrachloroethane	µg/L	20	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
1,1,1-Trichloroethane	µg/L	10	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
1,1,2,2 Tetrachloroethane	µg/L	70	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
1,1,2-Trichloroethane	µg/L	800	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
1,1-Dichloroethane	µg/L	200	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
1,1-Dichloroethylene	µg/L	40	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Ethylene Dibromide	µg/L	5	< 0.2	< 0.2	< 0.2	< 0.2	<0.2
1,2-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
1,2-Dichloroethane	µg/L	100	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
1,2-Dichloropropane	µg/L	0.7	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
1,3-Dichlorobenzene	µg/L	2.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
1,4-Dichlorobenzene	µg/L	4	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Methyl Ethyl Ketone	µg/L	400	< 20	< 20	< 20	< 20	<20
Methyl Isobutyl Ketone	µg/L	-	< 20	< 20	< 20	< 20	<20
Acetone	µg/L	-	**50**	**50**	< 30	< 30	<30
Benzene	µg/L	100	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Bromodichloromethane	µg/L	-	< 2	< 2	< 2	< 2	<2
Bromoform	µg/L	60	< 5	< 5	< 5	< 5	<5
Bromomethane	µg/L	0.9	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Carbon Tetrachloride	µg/L	-	< 0.2	< 0.2	< 0.2	< 0.2	<0.2
Chlorobenzene	µg/L	15	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Chloroform	µg/L	-	**3**	**1**	**1**	**1**	<1
cis 1,2-Dichloroethene	µg/L	200	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
cis 1,3-Dichloroethene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Dibromochloromethane	µg/L	40	< 2	< 2	< 2	< 2	<2
Dichlorodifluoromethane	µg/L	100	< 5	< 5			
Ethylbenzene	µg/L	-	< 0.5	< 0.5	<0.5	< 0.5	<0.5
m & p-Xylene	µg/L	-	< 1.0	< 1.0	< 1.0	< 1.0	<1
o-Xylene	µg/L	40	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Toluene	µg/L	0.8	< 0.5	**1.5**	< 0.5	< 0.5	<0.5
Methyl tert-Butyl Ether	µg/L	-	< 2	< 2	< 2	< 2	<2
Methylene Chloride	µg/L	700				< 5	<5
Vinyl Chloride	µg/L	600	< 0.2	< 0.2	< 0.2	< 0.2	<0.2
Trichloroethylene	µg/L	20	< 0.5	< 0.5	< 0.5	< 0.5	<0.5
Xylene, m,p,o-	µg/L	-	< 1.1	< 1.1	< 1.1	< 1.1	<1.1

ODWQS - Ontario Drinking Water Quality Standards

Bold & Highlighted - ODWQS exceedance

Bold - Detection

Surface Water - PCBs

Location	Sample Date	PCB ug/L 0.001
SW1	26-Apr-07	<0.001
SW1	14-Apr-08	<0.001
SW1	19-Jun-08	<0.001
SW1	21-Oct-08	<0.001
SW1	7-May-09	<0.001
SW1	29-Oct-09	<0.001
SW1	30-Mar-10	< 0.001
SW1	3-May-10	< 0.001
SW1	25-Oct-10	< 0.001
SW1	27-May-13	<0.05
SW1	27-Apr-15	< 0.05
SW1	10-Jun-15	< 0.05
SW1	17-Nov-15	< 0.05
SW1	25-Apr-18	< 0.05
SW1	20-Apr-21	< 0.05
SW2	31-Mar-05	**0.100**
SW2	13-Mar-06	<0.0001
SW2	10-May-06	<0.04
SW2	10-Apr-07	<0.001
SW2	26-Apr-07	<0.001
SW2	25-Oct-07	<0.001
SW2	14-Apr-08	<0.001
SW2	19-Jun-08	<0.001
SW2	21-Oct-08	<0.001
SW2	7-May-09	<0.001
SW2	17-Jul-09	<0.001
SW2	29-Oct-09	<0.001
SW2	30-Mar-10	<0.001
SW2	3-May-10	< 0.001
SW2	25-Oct-10	< 0.001
SW2	27-May-13	<0.05
SW2	27-Apr-15	< 0.05
SW2	10-Jun-15	< 0.05
SW2	17-Nov-15	< 0.05
SW2	25-Apr-18	< 0.05
SW2	28-Jun-18	< 0.05
SW2	22-Aug-18	< 0.05
SW2	9-Oct-18	< 0.05
SW2	20-Apr-21	< 0.05
SW2	11-Aug-21	< 0.05
SW2	15-Jun-21	< 0.05
SW2	25-Apr-24	< 0.05

Location	Sample Date	PCB ug/L 0.001
SW4	26-Apr-07	**0.26**
SW4	25-Oct-07	<0.001
SW4	14-Apr-08	<0.001
SW4	19-Jun-08	<0.001
SW4	21-Oct-08	<0.001
SW4	7-May-09	<0.001
SW4	29-Oct-09	<0.001
SW4	30-Mar-10	<0.001
SW4	3-May-10	< 0.001
SW4	25-Oct-10	< 0.001
SW4	27-May-13	<0.05
SW4	27-Apr-15	< 0.05
SW4	11-Jun-15	< 0.05
SW4	17-Nov-15	< 0.05
SW4	25-Apr-18	< 0.05
SW4	20-Apr-21	< 0.05
SW4	15-Oct-21	< 0.05
SW4	25-Apr-24	< 0.05
SW13	28-Apr-15	< 0.05
SW13	11-Jun-15	< 0.05
SW13	18-Nov-15	< 0.05
SW13	21-Apr-16	< 0.05
SW13	26-May-16	< 0.05
SW13	8-Jun-16	< 0.05
SW13	11-Oct-16	< 0.05
SW13	24-Apr-17	<0.05
SW13	22-Jun-17	<0.05
SW13	24-Aug-17	<0.05
SW13	17-Oct-17	<0.05
SW13	25-Apr-18	< 0.05
SW13	28-Jun-18	< 0.05
SW13	22-Aug-18	< 0.05
SW13	11-Oct-18	< 0.05
SW13	24-Apr-19	< 0.05
SW13	17-Jul-19	< 0.05
SW13	13-Aug-19	< 0.05
SW13	16-Oct-19	< 0.05
SW13	30-Apr-20	< 0.05
SW13	20-Apr-21	< 0.05
SW13	15-Jun-21	< 0.05
SW13	11-Aug-21	< 0.05
SW13	26-Apr-22	< 0.05
SW13	21-Jun-22	< 0.05
SW13	24-Apr-23	< 0.05

Location	Sample Date	PCB ug/L 0.001
SW15	10-Apr-07	<0.001
SW15	26-Apr-07	**0.003**
SW15	25-Oct-07	<0.001
SW15	14-Apr-08	<0.001
SW15	21-Oct-08	<0.001
SW15	30-Mar-10	**81.00**
SW15	3-May-10	**85.00**
SW15	25-Oct-10	**80.00**
SW15	8-Aug-13	<0.05
SW15	21-Oct-13	<0.05
SW15	27-Apr-15	< 0.05
SW15	11-Jun-15	< 0.05
SW15	25-Apr-18	< 0.05
SW15	28-Jun-18	< 0.05
SW15	22-Aug-18	< 0.05
SW15	10-Oct-18	< 0.07
SW15	20-Apr-21	< 0.05
SW15	15-Jun-21	< 0.05
SW15	15-Oct-21	< 0.05
SW16	25-Apr-18	< 0.05
SW16	28-Jun-18	< 0.05
SW16	22-Aug-18	< 0.05
SW16	10-Oct-18	< 0.05
SW16	15-Oct-21	< 0.05
SW18	28-Apr-15	< 0.05
SW18	11-Jun-15	< 0.05
SW18	17-Nov-15	< 0.05
SW18	25-Apr-18	< 0.05
SW18	28-Jun-18	< 0.05
SW18	22-Aug-18	< 0.05
SW18	11-Oct-18	< 0.05
SW18	20-Apr-21	< 0.05
SW18	15-Jun-21	< 0.05
SW18	11-Aug-21	< 0.05
SW18	15-Oct-21	< 0.05
SW18	25-Apr-24	< 0.05
Emb A	9-May-18	< 0.05
Emb A	26-Jun-18	< 0.05
Emb A	28-Aug-18	< 0.05
Emb A	10-Oct-18	< 0.05
Emb A	15-Jun-21	<0.05
Emb A	11-Aug-21	<0.05
Emb A	25-Apr-24	<0.05

Surface Water - PCBs

Location	Sample Date	PCB ug/L 0.001
SW3	28-Apr-15	< 0.05
SW3	10-Jun-15	< 0.05
SW3	17-Nov-15	< 0.05
SW3	20-Apr-16	< 0.05
SW3	16-May-16	< 0.05
SW3	8-Jun-16	< 0.05
SW3	24-Apr-17	<0.05
SW3	22-Jun-17	<0.05
SW3	24-Aug-17	<0.05
SW3	17-Oct-17	<0.05
SW3	25-Apr-18	< 0.05
SW3	28-Jun-18	< 0.05
SW3	9-Oct-18	< 0.05
SW3	24-Apr-19	< 0.05
SW3	17-Jul-19	< 0.05
SW3	30-Apr-20	< 0.05
SW3	24-Jun-20	< 0.05
SW3	22-Oct-20	< 0.05
SW3	20-Apr-21	< 0.05
SW3	15-Jun-21	< 0.05
SW3	11-Aug-21	< 0.05
SW3	15-Oct-21	< 0.05
SW3	26-Apr-22	< 0.05
SW3	21-Jun-22	< 0.05
SW3	13-Oct-22	< 0.05
SW3	24-Apr-23	< 0.05
SW3	15-Aug-23	< 0.05
SW3	5-Oct-23	< 0.05
SW3	25-Apr-24	< 0.05
SW3	15-Aug-24	< 0.05
SW3	10-Oct-24	< 0.05
WPCP Eff	10-Feb-10	< 0.001
WPCP Eff	25-Apr-18	< 0.05
WPCP Eff	28-Jun-18	< 0.05
WPCP Eff	22-Aug-18	< 0.05
WPCP Eff	11-Oct-18	< 0.05
WPCP Eff	15-Jun-21	< 0.05
WPCP Eff	11-Aug-21	< 0.05
WPCP Eff	15-Oct-21	< 0.05
WPCP Eff	25-Apr-24	< 0.05

Location	Sample Date	PCB ug/L 0.001
SW14	31-Mar-05	**0.100**
SW14	13-Mar-06	<0.0001
SW14	10-May-06	**0.060**
SW14	10-Apr-07	<0.001
SW14	26-Apr-07	<0.001
SW14	14-Apr-08	<0.001
SW14	19-Jun-08	<0.001
SW14	21-Oct-08	<0.001
SW14	7-May-09	<0.001
SW14	29-Oct-09	<0.001
SW14	30-Mar-10	< 0.001
SW14	3-May-10	< 0.001
SW14	25-Oct-10	< 0.001
SW14	27-May-13	<0.05
SW14	28-Apr-15	< 0.05
SW14	11-Jun-15	< 0.05
SW14	17-Nov-15	< 0.05
SW14	25-Apr-18	< 0.05
SW14	28-Jun-18	< 0.05
SW14	22-Aug-18	< 0.05
SW14	11-Oct-18	< 0.05
SW14	15-Oct-21	< 0.05
SW14	25-Apr-24	< 0.05
CP-1	28-Jun-18	< 0.05
CP-1	10-Oct-18	< 0.05
CP-1	15-Jun-21	< 0.05
CP-1	15-Oct-21	< 0.05
CP-2	28-Jun-18	< 0.05
CP-2	15-Oct-21	< 0.05

Location	Sample Date	PCB ug/L 0.001
Emb B	9-May-18	< 0.05
Emb B	26-Jun-18	< 0.05
Emb B	28-Aug-18	< 0.05
Emb B	10-Oct-18	< 0.05
Emb B	15-Jun-21	<0.05
Emb B	11-Aug-21	<0.05
Emb B	25-Apr-24	<0.05
Emb C	9-May-18	< 0.05
Emb C	26-Jun-18	< 0.05
Emb C	28-Aug-18	< 0.05
Emb C	10-Oct-18	< 0.05
Emb C	15-Jun-21	<0.05
Emb C	11-Aug-21	<0.05
Emb C	25-Apr-24	<0.05
Scg-Up	24-Apr-17	<0.05
Scg-Up	24-Aug-17	<0.05
Scg-Up	9-May-18	< 0.05
Scg-Up	26-Jun-18	< 0.05
Scg-Up	28-Aug-18	< 0.05
Scg-Up	10-Oct-18	< 0.05
Scg-Up	15-Jun-21	<0.05
Scg-Up	11-Aug-21	<0.05
Scg-Up	25-Apr-24	<0.05
Scg-Down	9-May-18	< 0.05
Scg-Down	26-Jun-18	< 0.05
Scg-Down	28-Aug-18	< 0.05
Scg-Down	10-Oct-18	< 0.05
Scg-Down	15-Jun-21	<0.05
Scg-Down	11-Aug-21	<0.05
Scg-Down	25-Apr-24	<0.05

APPENDIX L

Lindsay OPS Landfill Stormwater Management System –
Annual Status Report 2024

Environmental Approvals

Fisheries & Aquatic Ecology

Terrestrial & Wetland Ecology

Environmental Engineering

Hydrogeology & Contaminant Hydrogeology

Arborist Services

Environmental Site Assessment

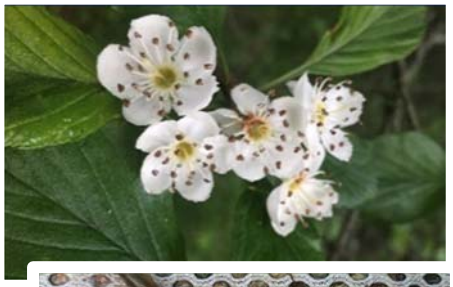
Species at Risk

Project Management

Environmental Impact Assessment

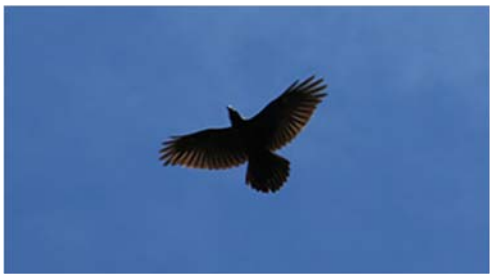
Water and Wastewater Engineering

Environmental Site Inspection / Construction Monitoring











Lindsay OPS Landfill
Stormwater Management System
2024 Annual Monitoring Report
51 Wilson Road
City of Kawartha Lakes

Prepared for City of Kawartha Lakes

AEC Project No. 25-010 | April 2025

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Environmental Assessments & Approvals

April 28, 2025 AEC 25-010

City of Kawartha Lakes
Waste Management Department
322 Kent St. West
Lindsay, ON
K9V 4T7

Attention: Ms. Ms. Kayla Pantaleo
Regulatory Compliance Officer

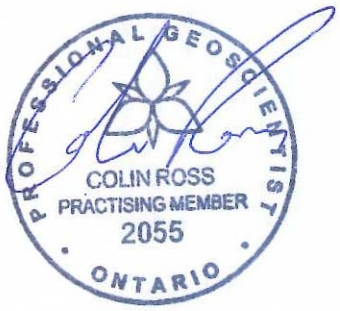
Re: 2024 Annual Monitoring Report – Stormwater Management System
Lindsay Ops Waste Disposal Site

Dear Kayla:

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to provide the 2024 Annual Monitoring Report (AMR) for the Lindsay Ops Waste Disposal Site Stormwater Management System. The data and interpretation included provides a summary of the 2024 monitoring data with comparison to the historical data and accurate assessment of the current state of the Stormwater Management System. This report has been prepared in compliance with the existing Environmental Compliance Approval (ECA) and applicable Provincial standards. This report is completed and included as an appendix of the 2024 AMR for the Lindsay Ops Landfill Site such that the data and interpretation should be completed in conjunction with the landfill AMR.

The data indicates that the facility operates within the design standards with data collected generally matching what has been observed historically.

Regards,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.



Colin Ross, B.Sc., P.Geo.
Senior Hydrogeologist

c.c. MECP – Peterborough District Office

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Appendix B: Water Quality Data
Appendix C 2024 Stormwater Management Pond Restoration As-Built Drawings

1.0 INTRODUCTION

The City of Kawartha Lakes ("the City") has retained Azimuth Environmental Consulting Inc. (Azimuth) to prepare the 2024 Annual Monitoring Report (AMR) for the Stormwater Management System (SMS) located at the Lindsay Ops Landfill Site (Site), which is required by Section 8(3) of the Ministry of the Environment, Conservation and Parks ("MECP") Amended Environmental Compliance Approval ("ECA") No. 8401-AFST88 for the stormwater management facility at the Lindsay-Ops Landfill Site ("the Site"). The ECA was issued on May 25, 2017 to replace the December 2012 ECA No. 8668-92MTK7 which covered both the Leachate Collection/Disposal System and the Stormwater Management System. The Leachate Collection/Disposal System has been removed from the new ECA and is now covered under the Lindsay Ops Landfill Waste ECA No. A321504. A subsequent ECA amendment was issued (ECA No. 1812-CBRMK) in February, 2022 (Appendix A) to allow for the installation of a discharge pipe with flow control (valve) for the outlet of the compost pond into Lagoon 1. This was constructed in 2022.

This report, which follows the format and system description presented in previous years provides environmental performance monitoring data and assessment as well as a summary of inspection / maintenance activities for the SMS for the period of January 1 to December 31, 2024, and includes:

- an overview of the stormwater management facility installed within both the Old Landfill Area and the New Expansion Area of the Site;
- any potential impact or temporary alteration of the facility from adjacent land uses or construction activities;
- a summary and interpretation of the 2024 water quality monitoring data for the stormwater management facility;
- a summary of inspection and maintenance activities; and
- an evaluation of the adequacy of the stormwater management facility.

2.0 BACKGROUND

The Site is located approximately 2.5 km north of Lindsay off of Highway 36, adjacent to the east shore of the Scugog River. The legal description of the Site is Part of Lots 25, 26 and 27, Concession 6, in the former Township of Ops, now the City of Kawartha Lakes. The former Town of Lindsay commenced landfill operations at the Site in 1980. On December 14, 2001, approval for the continued use and north expansion of the Site was granted by the MECP. The Site is approved to receive residential, commercial, institutional and industrial non-hazardous

municipal waste, and contaminated excess soils generated within the City, as well as biosolids from the Lindsay Water Pollution and Control Plant ("Lindsay WPCP").

2.1 Stormwater Management System

The stormwater management system receives stormwater runoff from a total drainage area of 35.3 ha and is designed for storm events up to a 1 in 100-year return frequency. The stormwater management system is completely isolated from the adjacent wastewater treatment facility; however, it does receive flows from adjacent agricultural fields along Wilson Road (opened and un-opened road allowance portions).

The components of the stormwater management system are shown on Figure 1. A description of each component is provided below.

2.1.1 South Stormwater Management Facility

This part services the 7.8 ha area including the low permeability final cover area of the closed southern section of the old landfill mound, which consists of:

- one (1) 230 m long stormwater drainage perimeter ditch running along the eastern side of the closed southern portion of the landfill, servicing 1.0 ha of the low permeability final cover drainage area, having a minimum depth of 0.6 m, a base width of 0.6 m, 2H:1V side slopes, a longitudinal slope ranging from 0.9% to 2.5% that drains north and discharges to the Quality Control Ponds via connecting ditches serving the north expansion area of the landfill;
- one (1) 390 m long stormwater drainage perimeter ditch running along the southern side of the closed southern portion of the landfill, serving 4.8 ha of the low permeability cover drainage area, having a minimum depth of 0.6 m, a base width of 0.6 m, 2H:1V side slopes, a longitudinal slope ranging from 0.9% to 3.8%, lined with 1.5 mm (60 mil) HDPE geomembrane and geo-composite drainage layer extending from the low permeability final cover, a non-woven geotextile, and a layer of 100 mm diameter rip-rap, discharging through a common outlet ditch at the southwest corner of the old landfill as described below;
- one (1) 210 m long stormwater drainage perimeter ditch running along the western side of the closed southern portion of the landfill, serving 2.0 ha of the low permeability cover drainage area, having a minimum depth of 0.6 m, a base width of 0.6 m, 2H:1V side slopes, a longitudinal slope ranging from 0.9% to 1.1%, lined with 1.5 mm HDPE geomembrane and geo-composite drainage layer extending from the low permeability final cover, a non-woven geotextile, and a layer of 100 mm diameter rip-rap layer, discharging south through a common outlet ditch described below; and

- one (1) 60 m long stormwater common outlet drainage ditch located at the southwest corner of the closed part of the old landfill mound, having a minimum depth of 0.6 m, a base width of 1.0 m, 2H:1V side slopes, lined with 1.5 mm HDPE geomembrane, non-woven geo-textile, and 100 mm diameter rip-rap, discharging through two (2) 15 m long x 600 mm diameter corrugated steel culverts to an existing roadside ditch along the north side of Lagoon Road. The roadside ditch crosses Lagoon Road near the Water Pollution Control Plant (WPCP) gate through a 900 mm corrugated steel culvert and connects to a 450 m long ditch that discharges to an embayment of the Scugog River southwest of Lagoon 6.

2.2 North Stormwater Management Facility

This part services the 27.5 ha drainage area of the North Expansion Area of the landfill, consisting of:

- two (2) identical stormwater Quality Control Ponds (one on duty 'Pond A' and the other on standby 'Pond B'), each pond designed for settling of suspended solids under a 25 mm, 4-hour duration storm event. Each pond has a permanent pool storage volume of 3,650 m^3 and an extended detention storage volume of 4,000 m^3. Each is equipped with a forebay, an inlet structure and an outlet structure which includes a 1,200 mm diameter perforated CSP riser with a 150 mm diameter orifice plate placed on a 300 mm diameter outlet pipe equipped with a gate valve;
- one (1) Quantity Control Lagoon (Lagoon 1) with a surface area of approximately 5.57 ha and a maximum storage capacity of 90,000 m^3, equipped with an outlet structure consisting of a headwall with a 750 mm diameter CSP pipe and manually operated stop logs to discontinue the discharge of stormwater into the receiving drainage ditch if required; and
- a series of stormwater collection perimeter ditches.

2.3 Stormwater Quality Control Pond Operation

The two stormwater Quality Control Ponds of the North Stormwater Management Facility serve as settling ponds for suspended solids. Each is designed to provide settling of suspended solids under a 4-hour, 25 mm storm event.

The gate valve on the outlet pipe of the Quality Control Ponds remains fully open. However, if surface water quality monitoring indicates contamination in excess of the discharge criteria (total ammonia concentration of >5 mg/L or pH <6.0 or >8.5), then the gate valve is to be closed until the origin of the contamination has been determined, the problem corrected and sampling undertaken to confirm that the stormwater inflow meets the required discharge criteria

discussed in Section 3.2. At that time, the gate valve can be re-opened to allow flow into the Lagoon 1 Quantity Control Pond. The weir on the outlet structure of the Quality Control Ponds controls the discharge rate as it is located downstream of the gate valve noted above. The weir is self operating and not adjustable.

The Lagoon 1 Quantity Control Pond receives outflow from the Quality Control Ponds and serves as a wetland feature for additional water quality improvement. It is not required for attenuation of peak storm flows, but does provide additional storage capacity if required to retain stormwater due to water quality issues. The criterion for stopping flow from this pond at the stop log outlet structure (north end of the pond) is discussed in Section 3.2.

3.0 STORMWATER MANAGEMENT SYSTEM MONITORING PROGRAM

3.1 Comprehensive Water Quality Monitoring

Condition 6 of the Stormwater ECA stipulates comprehensive water quality monitoring and recording requirements for the stormwater management facility in the North Expansion Area. Grab samples are to be collected quarterly at sampling locations SW-15 (located at the entrance to the Quality Control Pond) and SW-14 (located along the north ditch downstream of the outlet of the Lagoon 1 Quantity Control Pond) and analyzed for a comprehensive list of water quality parameters, including conductivity, select major ions, select trace metals, biochemical oxygen demand (BOD), chemical oxygen demand (COD), total suspended solids (TSS), total dissolved solids (TDS), phenols, and nutrients. The sampling locations are shown in Figure 1.

During a Site inspection in 2013, the MECP recommended that the SW-14 location be moved to the outlet structure of Lagoon 1 to ensure that the water quality at SW-14 reflects only the discharge from Lagoon 1 rather than a mixture of the Lagoon 1 effluent and upstream flow in the north ditch. In response to this request, the City added a new station SW18 at the outlet of the Lagoon 1 Quantity Pond in 2015, while maintaining SW-14 at its current location for comparative purposes.

In 2024, four (quarterly) water quality sampling events were completed, but due to dry conditions during some sampling events, samples could not be collected at some of the locations. The following table summarizes when and where samples were collected in 2024.

Table 1: North Stormwater Management System – 2024 Monitoring Program

Parameter(s)	Sampling Frequency		
	SW-14	SW-15	SW-18
Field Parameters (pH, temperature, Conductivity, dissolved oxygen)	April, June, August & October	August & October	April, June, August & October
General Chemistry, Major Ions, Trace Metals, Nutrients, BOD, DOC, COD, Phenols			

In addition to the sampling summarized above, SW-14, SW15 and SW-18 were sampled for total ammonia after storm events as summarized in Table 2.

Table 2: North Stormwater Management System – 2024 Storm Event Sampling

Sampling Frequency		
SW-14	SW-15	SW-18
March, April, May & July	March, April, May & July	March, April, May & July

Sample collection was carried out by Azimuth and City staff throughout 2024. Samples were submitted to Caduceon Environmental Laboratories to perform water quality analyses. The analytical results are summarized in Appendix B.

Review of the 2024 comprehensive water quality data for SW-14, SW-15 and SW-18 indicates concentrations slightly greater than PWQO for the following parameters:

Table 3: 2024 PWQO Exceedances for SW-14, SW-15 and SW-18

SW-15 (entrance to the Quality Control Pond A)	**SW-18** (outlet Structure of Quantity Control Pond Lagoon 1)	**SW-14** (north ditch downstream of the outlet of the Quantity Control Pond Lagoon 1)	**SW-4*** (background station in north ditch)
Iron (x1.6)	Iron (x2.9)	Iron (x2.5)	-
Phosphorus (x1.7)	Phosphorus (x6.7)	Phosphorus (x2.7)	Phosphorus (x1.3)
Phenols (x2)		Phenols (x2)	-
Aluminum (x4.4)		Aluminum (x2.4)	Aluminum (x1.9)
Unionized Ammonia (x1.5)			
Silver (x3)	Silver (x3)	Silver (x4)	-

(x 8.0) – denotes the maximum extent to which the PWQO was exceeded in 2024 (e.g., 8 times higher than PWQO)
* - SW-4 (background reference from landfill program).

The exceedances of the PWQO parameters are similar to previous year's results, albeit are most likely related to suspended natural soil/organic particles rather than landfill leachate impacts. This is supported by the fact the most elevated concentrations are found when TSS concentrations are elevated. Similarly, these locations typically have low levels of key leachate parameters such as total ammonia (<0.1 mg/L) historically. These trends continued in 2023 with ammonia concentrations generally falling below 0.35 mg/L. The exception to these trends was a more significant value of 5.5 mg/L at SW15 during the March storm sampling event. However, it is noted that the next sampling event in April indicated an ammonia concentration of 0.07 mg/L. Sporadic elevations for ammonia have been observed historically at this location. It is likely that these localized elevated concentrations are likely reflective of localized stagnant conditions within the stormwater management pond in which SW15 is located. It is also noted that similar elevations are not observed further downstream at SW18 and SW14. This is supported by the lack of sufficient water depth in the ditches throughout the year, (even following storm events) to facilitate sampling. The PWQO exceedances at the quality pond inlet station SW-15, as well as SW-14 and SW-18 are sediment related as this station is prior to sediment deposition in the pond. At SW-14 & SW-18, located along the north ditch downstream of the Quantity Pond (Lagoon 1) outlet, the PWQO exceedances are typically minor, sediment related and generally comparable to the background station (SW-4) historical results.

For a more comprehensive discussion regarding the surface water quality, the reader is referred to Section 2.2.4.5.3 of the landfill AMR.

3.2 Operational Stormwater Quality Monitoring

According to the Stormwater ECA Condition 5(2), additional sampling for pH and total ammonia is required if the total ammonia concentration is greater than 1 mg/L at SW14 and/or SW15. With the addition of Station SW-18 at the outlet of the Lagoon 1 Quantity Pond in 2015 (at the request of the MECP), the City has included this station for the operational stormwater quality monitoring required by Stormwater ECA Condition 5(2). The additional sampling for pH and total ammonia is to be undertaken during each subsequent storm event causing stormwater runoff to the Quality Control Ponds, until four consecutive storm events give total ammonia concentrations of less than 1 mg/L and pH levels between 6.0 and 8.5. The outlet structure (stop log structure) at the Quantity Control Pond (Lagoon 1) is to be closed if the total ammonia level exceeds 5 mg/L and/or the pH falls outside the range of 6.0 to 8.5.

In 2024, the total ammonia levels at all stations (SW-14, SW-15 and SW-18) were less than 1 mg/L with the exception of the March storm monitoring event at SW-15. Lab and field pH values were in the allowable range of 6.0 to 8.5 at SW-14, SW-15 and SW-18. Given the pH values and the fact ammonia concentrations remained below 1 mg/L during the following the subsequent monitoring events in 2024 at SW-15, continued discharge of outflow from the stormwater pond was permitted. These subsequent events included five storm sampling events, two of which were dry, with the remaining concentrations being between 0.06 and 0.07 mg/L for ammonia. The remaining two routine monitoring events in August and October also had low ammonia concentrations with concentrations of 0.31 & 0.34 mg/L respectively.

4.0 INSPECTION AND MAINTENANCE

4.1 Stormwater Management System

The Stormwater Management System was inspected regularly as part of the monthly landfill site inspections.

The monthly inspections completed by City staff indicated that the ditches were in good condition, with the exception of the May inspection which identified that the ditch was blocked at SW14 due to beaver activity. Further issues were not noted in the June inspection such that it is assumed that the blockage was addressed.

Sediment thickness measurements were undertaken in August 2021, where sediment thicknesses were measured in the Quality Control Pond A (north) and Pond B (south). The

sediment thickness in Pond A ranged from 25 cm to 49 cm with an average thickness of 36 cm. The sediment thickness in Pond B ranged from 39 cm to 47 cm with an average of 42 cm. Removal of the sediment in the Quality Control Ponds is recommended when the thickness reaches about 30 cm. A Capital Project was created for the sediment removal in Pond A and Pond B. This work was awarded to WSP and completed in July of 2024. The existing condition As-builts are attached as Appendix C.

As part of this work, the following activities occurred:

- Pre/post construction survey;
- Retain ecologist to relocate aquatic species from ponds prior to dewatering:
- Dewater existing sedimentation ponds and forebays;
- Earthwork (removal of sediments) and grading to proposed grades as per Construction Drawings;
- Construction of rip rap spillways;
- Restoration of areas disturbed by the work;
- Protect existing monitoring wells during construction;
- Provide temporary silt fence as required to limit sediment discharge outside the work area during construction; and
- Demobilization and closeout.

Beyond the above noted tasks, the following items are noted which related to these activities:

- The sediment removed was too wet to be placed on the landfill so it was placed in a staging area near Lagoon 1;
- During the grubbing on the berms, the contractor found an abandoned concrete pipe. This was removed along with a buried gate valve from the berm. The berm was restored to original conditions; and
- The valve in the North sedimentation pond was replaced (due to ceasing and difficult to close).

Aside from the works completed in 2024, overall, the Stormwater Management System was in good operating order.

5.0 SUMMARY

Based on the results of the 2024 performance assessment for the stormwater management facility, the following summary is provided:

- The stormwater management facility was operated in 2024 in accordance with Amended Environmental Compliance Approval No. 8401-AFST88;

- In 2024, water quality samples were collected from SW-14, SW-15 and SW-18 on a quarterly basis in accordance with ECA requirements;
- Minor exceedances of PWQO were obtained at SW-14 (north ditch downgradient of Lagoon 1) for phosphorus, iron, aluminum, phenols and silver similar to previous years and in line with concentrations historically observed at the background locations SW-4. At SW-18 (Lagoon 1 Quantity Control Pond outlet) minor exceedances of PWQO were obtained for phosphorous, iron & phenols, with concentrations similar to background. At SW-15 (Quality Control Pond 'B' inlet) exceedances of PWQO were obtained for phosphorous, iron, phenols, aluminum, unionized ammonia & silver similar to previous years. These exceedances are considered to mainly reflect suspended natural soil/organic particles rather than leachate impacts as these parameters are exceeded and elevated in the background location historically. Overall, the PWQO exceedances at SW-15 are expected as this station is prior to sediment deposition in the ponds;
- In 2024, the ammonia concentration exceeded the trigger value of 1 mg/L during the May monitoring (5.55 mg/L) event at SW-15; however, the subsequent sampling events indicated concentrations were well below the trigger value ranging between 0.06 and 0.34 mg/L. Therefore, there were no requirement for additional actions as part of the singular trigger exceedance; and
- The maintenance work completed in 2024 was completed without issue and is expected to facilitate the continued effectiveness of the Stormwater Management System.

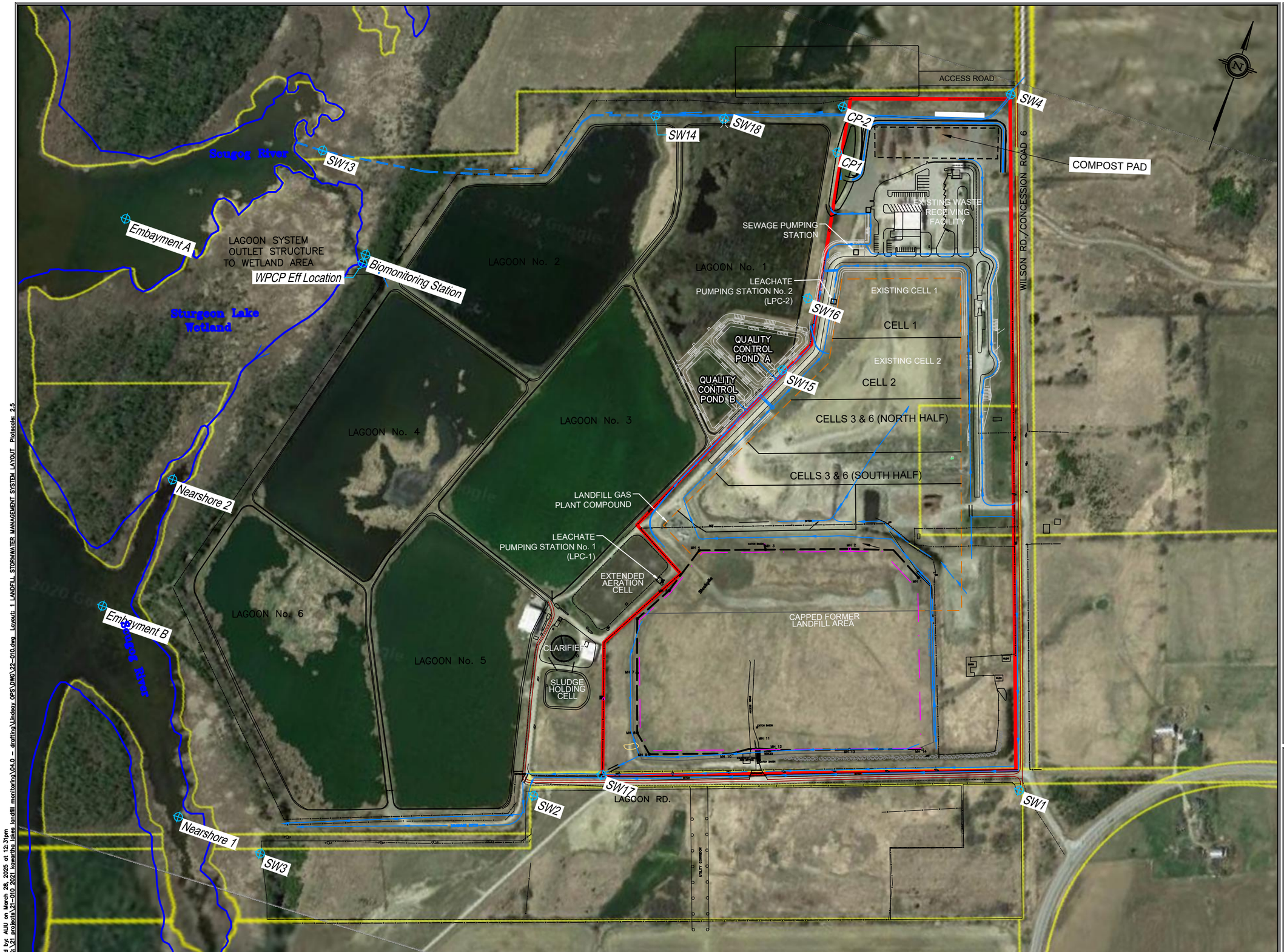
6.0 RECOMMENDATIONS

The following recommendations are made regarding the operation and performance of the Stormwater Management Facility and are similar to what has been included in previous reports:

- Regular inspection of the perimeter of the North Expansion fill area should continue to be carried out to check that run-off from areas having daily and/or interim cover is being contained within the perimeter containment berm and captured by the leachate collection system. This is important in preventing leachate impacts on the perimeter drainage ditches that feed the stormwater quality ponds. Particular attention should be given to the area around entrance ramps along the west side of the active waste fill area where contaminated run-off could potentially flow down the ramp and into the external ditches;
- Follow Condition 6(2) to ensure that surface water samples are collected during and/or following rain events(s); and

- Undertake regular maintenance and grading of the ditches to ensure flow is following the prescribed patterns as indicated in the stormwater management facility design and associated drawings/ plans.

Figures



LEGEND:

- Approx. Property Boundary
- Limit of Old Landfill
- Limit of Landfill Expansion Area
- Leachate Collector
- Fence
- Surface Water Monitoring Locations

75m 0 150m

HORIZONTAL SCALE 1:5,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Surface Water Monitoring Network

Lindsay OPS Landfill,
Lindsay, ON

DATE ISSUED:	March 2025	Figure No.
CREATED BY:	JLM	1
PROJECT NO.:	25-010	
REFERENCE:	First Base Solutions	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Lindsay OPS\DWG\21-010.dwg

Plotted by: ALIU on March 28, 2025 at 12:31pm
File: Q:\21 projects\21-010 2021 kawartha lakes landfill monitoring\04.0 - drafting\Lindsay OPS\DWG\22-010.dwg Layout: 1 LANDFILL STORMWATER MANAGEMENT SYSTEM LAYOUT Plotscale: 2.5

APPENDICES

Appendix A: **MECP Environmental Compliance Approval (ECA)**
Appendix B: **Water Quality Data**
Appendix C **2024 Stormwater Management Pond Restoration As-Built Drawings**

APPENDIX A

MECP Environmental Compliance Approval (ECA)

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 1812-CBRM4K
Issue Date: February 28, 2022

City of Kawartha Lakes
322 Kent Street West
Post Office Box 9000
Kawartha Lakes, Ontario
K9V 4T7

Site Location: Lindsay - Ops Landfill Site
51 Wilson Road
Lot 25,26,27, Concession 6, former Ops Township
City of Kawartha Lakes, Ontario

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

usage and operation of the existing stormwater management facility to service Lindsay-Ops Landfill Site, located on Lots 26 and Lots 27, Concession 6, in the City of Kawartha Lakes, receiving stormwater runoff from a total drainage area of 35.3 ha, designed to attenuate storm events up to 1:100 year return frequency as follows:

Proposed Works

- one (1) discharge pipe with flow control to quantity control lagoon (Lagoon 1);

Existing Works

South Stormwater Management Facility

stormwater management facility to service 7.8 ha drainage area of the closed part of the Lindsay-Ops Landfill Site located on the southern part of the site, consisting of the following:

- One (1) 7.8 ha drainage area of the closed part of Lindsay-Ops Landfill Site covered with low permeability final cover consisting of 1.5 mm HDPE textured geomembrane and geocomposite drainage layer, 0.55 m thick loam cover soil, and grass vegetation, discharging to perimeter ditches described below;

- One (1) 230 m long stormwater drainage perimeter ditch running along the eastern part of the closed part of the landfill site, serving 1.0 ha of the drainage area, having a minimum depth of 0.6 m, a base width of 0.6 m, 2H:1V side slopes, a longitudinal slope ranging from 0.9% to 2.5%, draining north and discharging to the quality control ponds via connecting ditches serving the expansion drainage area of the landfill;

- One (1) 390 m long stormwater drainage perimeter ditch running along the southern part of the closed part of the landfill site, serving 4.8 ha of the drainage area, having a minimum depth of 0.6 m, a base width of 0.6 m, 2H:1V side slopes, a longitudinal slope ranging from 0.9% to 3.8%, lined with 1.5 mm HDPE geomembrane and geocomposite drainage layer extending from the final cover of the closed landfill, non-woven geo-textile, and 100 mm diameter rip-rap layer, discharging through a common outlet ditch described below;

- One (1) 210 m long stormwater drainage perimeter ditch running along the western part of the closed part of the landfill site, serving 2.0 ha of the drainage area, having a minimum depth of 0.6 m, a base width of 0.6 m, 2H:1V side slopes, a longitudinal slope ranging from 0.9% to 1.1%, lined with 1.5 mm HDPE geomembrane and geocomposite drainage layer extending from the final cover of the closed landfill, non-woven geo-textile, and 100 mm diameter rip-rap layer, discharging through a common outlet ditch described below;

- One (1) 60 m long stormwater drainage ditch located at the southwest corner of the closed part of the landfill site, having a minimum depth of 0.6 m, a base width of 1.0 m, 2H:1V side slopes, lined with 1.5 mm HDPE geomembrane, non-woven geo-textile, and 100 mm diameter rip-rap layer, discharging through two (2) culverts described below;

- Two (2) 15 m long x 600 mm diameter corrugated steel culverts discharging to an existing roadside ditch along the north side of Lagoon Road crossing Lagoon Road through an existing 900 mm corrugated steel culvert to an existing approximately 450 m long ditch which discharges to an embayment of Scugog River;

- all controls and associated appurtenances;

North Stormwater Management Facility

stormwater management facility to service 27.5 ha drainage area of the Lindsay-Ops Landfill Site expansion area located north of the existing closed part of the site, consisting of the following:

- Two (2) identical stormwater quality control ponds (one on duty, one on standby), each pond designed for a 25 mm 4 hour duration storm event providing a permanent pool storage volume of 3,650 m^3 and an extended detention storage volume of 4,000 m^3, equipped with a forebay, an inlet structure and outlet structure which includes a 1200 mm diameter perforated CSP riser with a 150 mm diameter orifice plate placed on a 300 mm diameter outlet pipe;

- One (1) quantity control lagoon (Lagoon 1) with a surface area of approximately 5.57 ha and a maximum storage capacity of 90,000 m^3, equipped with an outlet structure consisting of a headwall with a 750 mm diameter CSP pipe and manually operated stop logs to discontinue the discharge of stormwater into the receiving drainage ditch if required;

- Series of stormwater collection perimeter ditches;

all in accordance with the submitted supporting documents listed in Schedule A.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "Approval" means this environmental compliance approval and any schedules attached to it, and the application;

2. "CBOD5" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;

3. "Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

4. "District Manager" means the District Manager of the appropriate local district office of the Ministry where the Works is geographically located;

5. "EPA" means the *Environmental Protection Act* , R.S.O. 1990, c.E.19, as amended;

6. "Equivalent Equipment" means alternate piece(s) of equipment that meets the design requirements and performance specifications of the piece(s) of equipment to be substituted;

7. "Existing Works" means those portions of the Works included in the Approval that have been constructed previously;

8. "Limited Operational Flexibility" (LOF) means the conditions that the Owner shall follow in order to undertake any modification that is pre-authorized as part of this Approval;

9. "Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

10. "Notice of Modifications" means the form entitled "Notice of Modifications to Sewage Works";

11. "Owner" means City of Kawartha Lakes and its successors and assignees;

12. "OWRA" means the *Ontario Water Resources Act* , R.S.O. 1990, c. O.40, as amended;

13. "Professional Engineer" means a person entitled to practice as a Professional Engineer in the Province of Ontario under a license issued under the Professional Engineers Act;

14. "Proposed Works" means those portions of the Works included in the Approval that are under construction or to be constructed;

15. "Works" means the approved sewage works, and includes Proposed Works, Existing Works and modifications made under Limited Operational Flexibility.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL CONDITIONS

1. The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

2. Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, and the application for approval of the Works.

3. Where there is a conflict between a provision of any document in the schedule referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence, and where there is a conflict between the documents in the schedule, the document bearing the most recent date shall prevail.

4. Where there is a conflict between the documents listed in Schedule A and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

5. The conditions of this Approval are severable. If any condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.

6. The issuance of, and compliance with the conditions of, this Approval does not:

    a. relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority/MNRF necessary to construct or operate the sewage works; or

    b. limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

2. EXPIRY OF APPROVAL

1. This Approval will cease to apply to those parts of the Works which have not been constructed within five (5) years of the date of this Approval.

2. In the event that completion and commissioning of any portion of the Works is anticipated to be delayed beyond the specified expiry period, the Owner shall submit an application of extension to the expiry period, at least twelve (12) months prior to the end of the period. The application for extension shall include the reason(s) for the delay, whether there is any design change(s) and a review of whether the standards applicable at the time of Approval of the Works are still applicable at the time of request for extension, to ensure the ongoing protection of the environment.

3. CHANGE OF OWNER

1. The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:

    a. change of Owner;

    b. change of address of the Owner;

    c. change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act,* R.S.O. 1990, c.B17 shall be included in the notification to the District Manager; or

    d. change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the *Corporations Information Act,* R.S.O. 1990, c. C39 shall be included in the notification to the District Manager.

2. In the event of any change in ownership of the Works, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be forwarded to the District Manager and the Director.

3. The Owner shall ensure that all communications made pursuant to this condition refer to the number at the top of this Approval.

4. OPERATION MANUAL

1. The Owner shall prepare an updated operations manual for Works within one (1) year of the issuance date of this Approval, that includes, but not necessarily limited to, the following information:

    a. operating procedures for routine operation of the Works;

    b. inspection programs, including frequency of inspection, for the Works and the methods or

tests employed to detect when maintenance is necessary;

c. repair and maintenance programs, including the frequency of repair and maintenance for the Works;

d. procedures for the inspection and calibration of monitoring equipment;

e. a spill prevention control and countermeasures plan, consisting of contingency plans and procedures for dealing with equipment breakdowns, potential spills and any other abnormal situations, including notification of the District Manager; and

f. procedures for receiving, responding and recording public complaints, including recording any follow up actions taken.

2. The Owner shall maintain the operations manual current and retain a copy at the location of the Works or operational office of the Owner for the operational life of the Works. Upon request, the Owner shall make the manual available to Ministry staff.

3. The Owner shall inspect the Works at least once a year and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

4. The Owner shall maintain a logbook to record the results of the inspections completed under subsection (3) and any cleaning and maintenance operations undertaken, and shall keep the logbook at the site or operational office of the Owner for inspection by the Ministry. The logbook shall include the following:

   a. the name of the Works; and

   b. the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed.

5. The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the operation and maintenance and monitoring activities required by this Approval.

5. OPERATION AND MAINTENANCE

1. The Owner shall exercise due diligence in ensuring that, at all times, the Works and the related equipment and appurtenances used to achieve compliance with this Approval are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate operator staffing and training, including training in all procedures and other requirements of this Approval.

2. The Owner shall collect one (1) stormwater grab sample at sampling locations SW-14 and SW-15 during a storm event causing stormwater runoff from the landfill site such that at least four (4) samples from each sampling location are collected per year covering the spring, summer

and fall seasons. Each collected sample shall be analysed for pH and Total Ammonia, and if measured level of Total Ammonia is higher than 1 mg/L, then the Owner shall commence the following monitoring program:

3. For the North Stormwater Management Facility, the Owner shall collect one (1) stormwater sample during each subsequent storm event causing stormwater runoff to the quality control ponds and have it analysed for the trigger parameters pH and Total Ammonia. The Owner shall immediately close the outlet valve (stop logs) of Lagoon 1 to discontinue the discharge of stormwater into the receiving drainage ditch if any of the following conditions arises:

    a. $6.0 > pH > 8.5$

    b. Total Ammonia > 5.0 mg/L

4. The Owner shall ensure that potentially contaminated stormwater collected in Lagoon 1 as a result of subsection (3) is treated as a leachate and sent for treatment to the Lindsay WPCP.

5. For the South Stormwater Management Facility, the Owner shall collect one (1) stormwater sample during each subsequent storm event causing stormwater runoff to the perimeter drainage ditches and have it analysed for the trigger parameters pH and Total Ammonia. The Owner shall immediately initiate an investigation to identify the source of potential contamination to facilitate the implementation of a contingency and remedial action plan if any of the following conditions arises:

    a. $6.0 > pH > 8.5$

    b. Total Ammonia > 5.0 mg/L

6. The Owner shall revert back to routine operational monitoring as per subsection (2) if four (4) consecutive monitoring results as per subsection (3) or subsection (5) show that levels of Total Ammonia are less than 1 mg/L and pH levels are between 6.0 and 8.5.

7. The Owner shall undertake an inspection of the condition of the stormwater management ponds and ditches, at least once a year, and undertake any necessary cleaning and maintenance to prevent the excessive build up of sediment and/or decaying vegetation.

8. The owner shall maintain a logbook to record the results of the stormwater management pond inspections and any cleaning and maintenance operations undertaken and shall keep the logbook at the site for inspection by the Ministry.

6. MONITORING AND RECORDING

1. The Owner shall carry out the following monitoring program:

   a. All samples and measurements taken for the purposes of this Approval are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

   b. The Owner shall ensure that one (1) grab sample is collected at sampling location SW-15 (entrance to the quality control pond) and sampling location SW-14 (discharge to Scugog River) at a quarterly frequency and analysed for the parameters listed in Table 1. Samples shall be collected during the first storm event causing stormwater runoff into the quality control pond and/or Scugog River within each quarterly sampling period.

Table 1 - Stormwater Monitoring
Sampling Location: SW-14 and SW-15

Parameter		Filed Parameter
Alkalinity	Arsenic	Conductivity
CBOD5	Barium	Dissolved Oxygen (DO)
Chemical Oxygen Demand (COD)	Boron	pH
Chloride	Cadmium	Temperature
Conductivity (Laboratory)	Chromium	
Iron	Copper	
Nitrate as Nitrogen	Lead	
Nitrite as Nitrogen	Mercury	
pH (Laboratory)	Zinc	
Sulphate		
Total Ammonia Nitrogen		
Total Kjeldahl Nitrogen		
Total Phosphorus		
Total Suspended Solids		
Total Dissolved Solids		
Total Phenols		

2. The methods and protocols for sampling, analysis, toxicity testing, and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

   a. the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended from time to time by more recently published editions;

b. the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater Version 2.0" (January 2016), PIBS 2724e02, as amended from time to time by more recently published editions; and

c. the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition), as amended from time to time by more recently published editions;

3. Following review of any of the analytical results required by this Condition or any of the reports required by Condition 8 of this Approval, the District Manager may alter the frequencies and locations of sampling and parameters for analysis required by this Condition if he/she considers it necessary for proper assessment of the operation of the works and its impact on the environment of if he/she is requested to do so by the Owner and considers it acceptable by the evidence of information submitted in support of the request.

4. The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Approval.

7. LIMITED OPERATIONAL FLEXIBILITY

1. The Owner may make modifications to the Works in accordance with the Terms and Conditions of this Approval and subject to the Ministry's "Limited Operational Flexibility Criteria for Modifications to Sewage Works", included under Schedule B of this Approval, as amended.

2. Sewage works under Limited Operational Flexibility shall adhere to the design guidelines contained within the Ministry's publication "Stormwater Management Planning and Design Manual – March 2003", as amended.

3. The Owner shall ensure at all times, that the Works, related equipment and appurtenances which are installed or used to achieve compliance are operated in accordance with all Terms and Conditions of this Approval.

4. For greater certainty, the following are not permitted as part of Limited Operational Flexibility:

   a. modifications to the Works that that result in an increase of the approved drainage area serviced by the Works or changes that adversely affect the operational capacity of the Works;

   b. modifications to the Works that may adversely affect the approved effluent quality criteria or the location of the discharge/outfall;

   c. modifications to the treatment process technology of the Works, or modifications that involve construction of new reactors (tanks) or alter the treatment train process design;

   d. modifications to the Works approved under s.9 of the EPA; and

e. modifications to the Works pursuant to an order issued by the Ministry.

5. Implementation of Limited Operational Flexibility is not intended to be used for piecemeal measures that result in major alterations or expansions.

6. If the implementation of Limited Operational Flexibility requires changes to be made to the Emergency Response, Spill Reporting and Contingency Plan, the Owner shall, as deemed necessary in consultation with the District Manager, provide a revised copy of this plan to the local fire services authority prior to implementing Limited Operational Flexibility.

7. For greater certainty, any modification made under the Limited Operational Flexibility may only be carried out after other legal obligations have been complied with, including those arising from the *Environmental Protection Act, Niagara Escarpment Planning and Development Act, Oak Ridges Moraine Conservation Act, Lake Simcoe Protection Act* and *Greenbelt Act.*

8. At least thirty (30) days prior to implementing Limited Operational Flexibility, the Owner shall complete a Notice of Modifications describing any proposed modifications to the Works and submit it to the District Manager.

9. The Owner shall ensure that an engineering assessment is completed for each Notice of Modifications prior to submitting the Notice of Modifications to the District Manager. The engineering assessment shall be prepared by a Professional Engineer that was not involved in the design of the Proposed Works. The Owner shall abide by the recommendations made under the engineering assessment for the Proposed Works. The engineering assessment shall include, at minimum, the following:

   a. description of the Proposed Works;

   b. an assessment of the eligibility of the Proposed Works under Limited Operational Flexibility;

   c. the documentation and drawings that were reviewed;

   d. regulatory requirements applicable to the Proposed Works;

   e. technical criteria used to assess the Proposed Works;

   f. input from the local conservation authority and/or MNRF office, and the Ministry, as applicable, if the Proposed Works discharge directly to a watercourse;

   g. any issues that were identified during the engineering review of the Proposed Works;

   h. design considerations and mitigating measures taken during construction and operation of the Works to protect sources of drinking water; and

   i. recommendations.

10. The design of the Proposed Works must be prepared by a Professional Engineer.

11. Upon the completion of the construction of Proposed Works, the Owner shall prepare a statement, certified by a Professional Engineer, that the works are constructed in accordance with the Notice of Modifications, and upon request, shall make the written statement available for inspection by Ministry personnel.

12. Within twelve (12) months of the Substantial Completion of Proposed Works, a set of as-built drawings showing the Proposed Works "as constructed" shall be prepared. These drawings shall be kept up to date through revisions undertaken from time to time, and be made available upon Ministry request.

8. REPORTING

1. One week prior to the start up of the operation of the Works (Compost Pad), the Owner shall notify the District Manager (in writing) of the pending start up date.

2. In addition to the obligations under Part X of the Environmental Protection Act, the Owner shall, within ten (10) working days of the occurrence of any reportable spill as defined on Ontario Regulation 675/98, bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.

3. The Owner shall prepare and submit a performance report to the District Manager on an annual basis by April 30th each calendar year. The first such report shall cover the first annual period following the commencement of operation of the Works and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

    a. a summary and interpretation of all monitoring data and an overview of the success and adequacy of the Works;

    b. a description of any operating problems encountered and corrective actions taken;

    c. a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works;

    d. a summary of any effluent quality assurance or control measures undertaken in the reporting period;

    e. a summary of the calibration and maintenance carried out on all effluent monitoring equipment;

    f. a copy of all Notice of Modifications submitted to the District Manager as a result of

Schedule B, Section 1, with a status report on the implementation of each modification;

g. a report summarizing all modifications completed as a result of Schedule B, Section 3; and

h. any other information the District Manager may require from time to time.

Schedule A

1. Application for Environmental Compliance Approval submitted by City of Kawartha Lakes received on March 17, 2021 for the proposed discharge pipe with flow control to existing quantity control lagoon (Lagoon 1), including all additional supporting information and drawings, prepared by WSP Canada Inc.

Schedule B

Limited Operational Flexibility Criteria for Modifications to Sewage Works

1. The modifications to sewage works approved under an Environmental Compliance Approval (Approval) that are permitted under the Limited Operational Flexibility (LOF), are outlined below and are subject to the LOF conditions in the Approval, and require the submission of the Notice of Modifications. If there is a conflict between the sewage works listed below and the Terms and Conditions in the Approval, the Terms and Conditions in the Approval shall take precedence.

    A. Stormwater Management Facilities

        a. Modifications of stormwater management facility to service the existing approved drainage area located within the site, provided that there is no increase in the average impervious area established in the original design and the discharges from the site will not exceed the attenuated flows established in the original design.

        b. Installation of new oil grit separators.

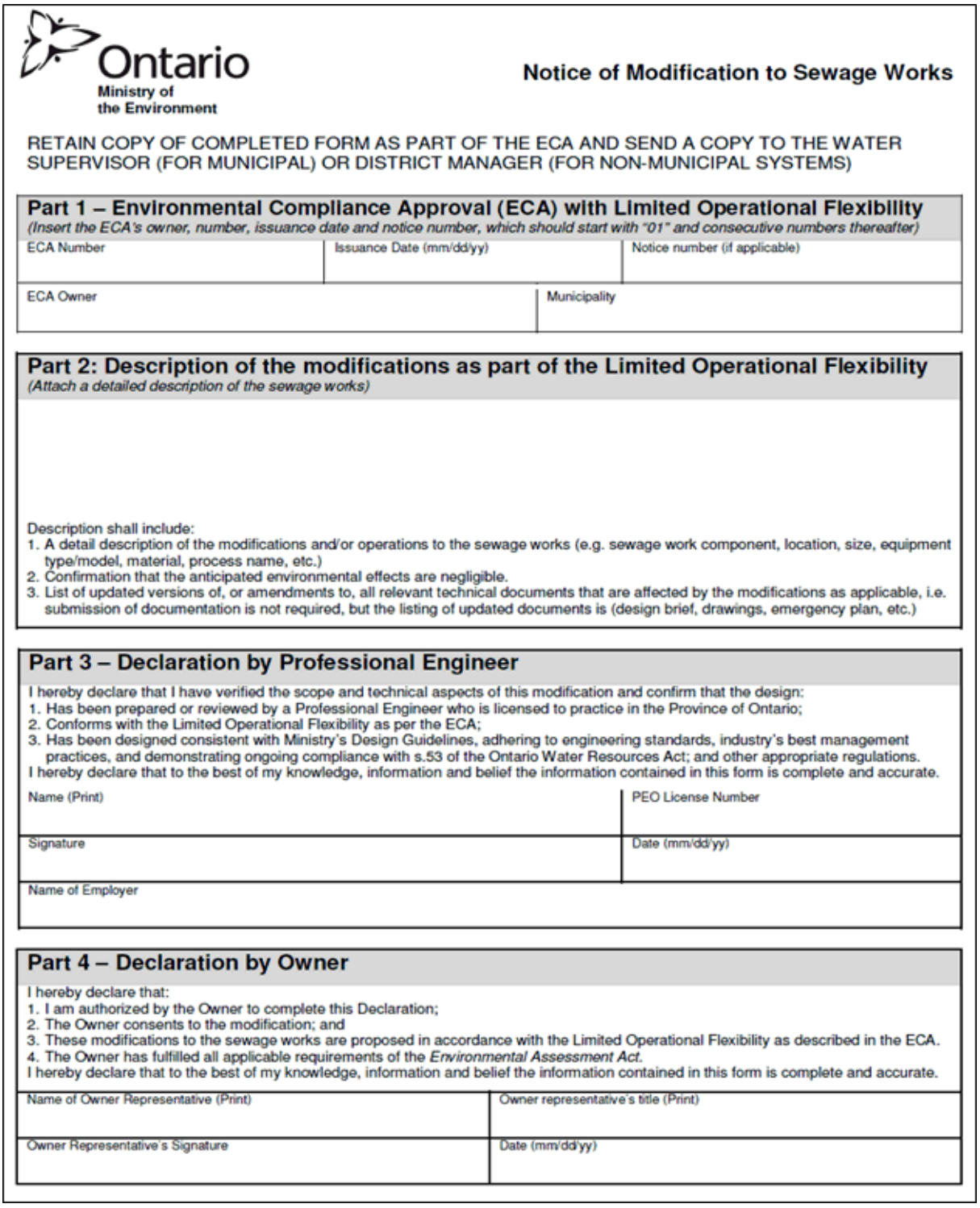
2. Sewage works that are exempt from section 53 of the OWRA by O. Reg. 525/98 continue to be exempt and are not required to follow the notification process under this Limited Operational Flexibility.

3. Normal or emergency operational modifications, such as repairs, reconstructions, or other improvements that are part of maintenance activities, including cleaning, renovations to existing approved sewage works equipment, provided that the modification is made with Equivalent Equipment, are considered pre-approved.

4. The modifications noted in sub-section (3) above are <u>not</u> required to follow the notification protocols under Limited Operational Flexibility, provided that the number of pieces and description of the equipment as described in the Approval does not change.

Notice of Modification to Sewage Works

This page contains an image of the form entitled "Notice of Modification to Sewage Works". A digital copy can be obtained from the District Manager.



Ontario
Ministry of the Environment

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA AND SEND A COPY TO THE WATER SUPERVISOR (FOR MUNICIPAL) OR DISTRICT MANAGER (FOR NON-MUNICIPAL SYSTEMS)

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

(Insert the ECA's owner, number, issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number	Issuance Date (mm/dd/yy)	Notice number (if applicable)

ECA Owner	Municipality

Part 2: Description of the modifications as part of the Limited Operational Flexibility

(Attach a detailed description of the sewage works)

Description shall include:
1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible.
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:
1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Conforms with the Limited Operational Flexibility as per the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.

Name (Print)	PEO License Number

Signature	Date (mm/dd/yy)

Name of Employer

Part 4 – Declaration by Owner

I hereby declare that:
1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. These modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act.*

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.

Name of Owner Representative (Print)	Owner representative's title (Print)

Owner Representative's Signature	Date (mm/dd/yy)

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.

2. Condition 2 is included to ensure that the Works are constructed in a timely manner so that standards applicable at the time of Approval of the Works are still applicable at the time of construction, to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to approved works and to ensure that subsequent owners of the works are made aware of the Approval and continue to operate the works in compliance with it.

4. Conditions 4 and 5 are included to ensure that a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner and made available to the Ministry. Such a manual is an integral part of the operation of the works. Its compilation and use should assist the owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the owner's operation of the works.

5. Condition 6 is included to provide a performance record for future references and to ensure that the Ministry is made aware of problems as they arise, so that the Ministry can work with the Owner in resolving the problems in a timely manner.

6. Condition 7 is included to ensure that the Works are operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider. These conditions are also included to ensure that a Professional Engineer has reviewed the proposed modifications and attests that the modifications are in line with that of Limited Operational Flexibility, and provide assurance that the proposed modifications comply with the Ministry's requirements stipulated in the terms and conditions of this Approval, policies, guidelines, and industry engineering standards and best management practices.

7. Condition 8 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 8401-AFST88 issued on May 25, 2017.

In accordance with Section 139 of the *Environmental Protection Act,* you may by written notice served upon me and the Ontario Land Tribunal within 15 days after receipt of this notice, require a hearing by the Tribunal.

Section 142 of the *Environmental Protection Act* provides that the notice requiring the hearing ("the Notice") shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the *Environmental Protection Act,* a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

and

The Director appointed for the purposes of Part II.1 of the *Environmental Protection Act*
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or www.olt.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the *Environmental Protection Act.*

DATED AT TORONTO this 28th day of February, 2022



Aziz Ahmed, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

LW/
c: District Manager, MECP Peterborough

APPENDIX B

Water Quality Data

Surface Water Chemistry Summary - General Water Quality

Parameter	UNITS	PWQO	SW4 21-Apr-14	SW4 27-Apr-15	SW4 11-Jun-15	SW4 17-Nov-15	SW4 20-Apr-16	SW4 25-May-16	SW4 8-Jun-16	SW4 24-Apr-17	SW4 22-Jun-17	SW4 24-Aug-17	SW4 17-Oct-17	SW4 25-Apr-18	SW4 24-Apr-19	SW4 31-Oct-19	SW4 30-Apr-20	SW4 20-Apr-21
pH -Lab	pH units	6.5-8.5	8.01	8.12	8.14	8.16	8.21	8.16	8.11	8.12	7.83	8	8.24	8.31	8.19	8.01	8.17	8.24
Conductivity	uS/cm	-	551	569	756	800	618	813	1180	501	653	643	720	508	557	447	550	575
BOD	mg/L	-	< 3	< 2	< 2	< 2	3	< 2	< 2	<3	<3	5	<3	< 3	< 3	< 3	< 3	< 3
COD	mg/L	-	8	< 5	13	< 5	11	17	21	8	6	15	9	18	19	22	14	7
Total Dissolved Solids	mg/L	-	301	317	401	458	347	438	639	269	350	363	407	269	293	247	304	328
Total Suspended Solids	mg/L	-	6	58	5	8	5	17	22	3	6	22	<3	5	12	< 3	< 3	< 3
Alkalinity	mg/L	-	278	292	312	256	249	327	385	251	346	328	366	232	230	132	225	264
Hardness	mg/L	-	291	308	305	339	299	362	433	261	347	404	409	246	282	195	265	290
Ammonia	mg/L	-	0.02	< 0.01	< 0.01	0.01	0.03	0.06	0.06	< 0.01	< 0.01	0.02	0.01	0.02	0.04	0.15	< 0.01	0.01
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-	107	113	109	123	109	130	153	93.3	123	135	149	88.6	101	69.1	96.7	106
Chloride	mg/L	-	6.6	6.8	45.4	55.8	34.2	52.5	148	6.6	3.7	7.5	8.8	12.7	19.2	16.2	24.2	19.5
DOC	mg/L	-	3.9	5.5	8.2	4.2	4.2	5.3	5.2	4.1	4.2	5.4	3.5	5.7	6.5	8.4	6.4	5.7
Fluoride	mg/L	-	0.1	0.2	0.1	0.1	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3	0.023	0.045	0.082	0.15	0.047	**0.569**	**1.14**	0.024	0.067	0.128	0.079	0.056	0.04	< 0.005	0.056	0.049
Magnesium	mg/L	-	5.54	6.3	7.67	7.5	6.67	8.78	12.3	4.85	6.55	7.95	8.79	5.86	5.25	5.31	5.71	6.13
Manganese	mg/L	-	0.008	0.015	0.037	0.048	0.019	0.375	0.87	0.004	0.065	0.036	0.025	0.01	0.004	0.004	0.02	0.013
Nitrate	mg/L	-	< 0.1	< 0.1	2	6.8	1.6	0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	1.32	2.65	< 0.05	0.85	0.69
Nitrite	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
TKN	mg/L	-	0.3	0.2	1	0.7	0.4	0.6	0.7	0.2	0.4	0.4	0.2	0.4	0.6	0.6	0.5	0.3
Sodium	mg/L	-	5.1	5.3	28.7	36.6	23.1	34.7	78.7	3.8	4.6	5	5.8	10.5	10.6	6	15.2	13
Sulphate	mg/L	-	9	10	13	49	16	13	13	9	4	9	14	10	17	60	17	15
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	**0.004**	**0.004**	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	0.03	**0.06**	< 0.01	0.03	**0.06**	0.01	0.03	**0.05**	< 0.01	0.02	**0.04**	0.02	0.02	0.01	0.03	0.02	**0.04**
Potassium	mg/L	-	0.7	0.7	0.5	1.5	1.8	0.5	0.4	0.6	0.6	1.3	1.3	1.5	1.8	4.8	1.5	1.2
Aluminum	mg/L	0.075	0.04	0.04	0.05	0.06	0.04	**0.1**	**0.16**	0.05	0.06	**0.12**	**0.12**	**0.08**	0.05	0.05	0.06	0.07
Antimony	mg/L	-	< 0.0001	0.0001	0.0002	0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0002	0.0005	0.0001	< 0.0001	0.0003	0.0004	0.0004	< 0.0001
Arsenic	mg/L	0.1	0.0001	0.0002	0.0003	0.0002	0.0002	0.0005	0.0005	0.0001	0.0003	0.0004	0.0002	0.0004	0.0002	0.0003	0.0002	0.0001
Barium	mg/L	-	0.025	0.029	0.033	0.045	0.037	0.053	0.057	0.024	0.035	0.039	0.048	0.037	0.037	0.021	0.035	0.034
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.005	0.008	0.005	0.007	< 0.005	0.024	0.013	0.006	0.016	0.022	0.017	0.007	0.006	0.007	0.011	0.009
Cadmium	mg/L	0.0002	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	0.00012	0.000041	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.1	< 0.0002	< 0.0002	0.0004	0.0003	0.0003	0.0003	0.0003	< 0.0015	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.0001	0.0003	< 0.0001	< 0.0001	0.0001	0.0003	0.0001	< 0.0001
Copper	mg/L	0.005	< 0.0001	0.0003	0.0012	0.0008	0.0005	0.001	0.0006	< 0.0001	0.0004	**0.0103**	**0.0056**	0.0005	0.0008	0.0015	0.0007	0.0006
Lead	mg/L	0.025	0.00019	< 0.00002	0.00044	0.00011	< 0.00002	< 0.00002	0.00023	< 0.00002	0.00002	0.00059	0.00039	0.00005	0.00003	0.00003	0.00006	0.00003
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	< 0.0001	0.0001	0.0002	0.0002	0.0001	0.0002	0.0002	0.0001	0.0001	0.0003	0.0001	0.0001	0.0003	0.0002	0.0002	0.0002
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	**0.00026**	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	-		0.303	0.309	0.332	0.288	0.359	0.439	0.232	0.341	0.347	0.352	0.225	0.234	0.17	0.228	0.261
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.000005	< 0.000005	< 0.000005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0005	0.0002	0.0004	0.0003	0.0002	0.0006	0.0005	0.0002	0.0002	0.0005	0.0004	0.0003	0.0004	0.0004	0.0004	0.0003
Zinc	mg/L	0.03	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.091**	0.014	0.027	0.016	0.024	0.006	0.012	< 0.005	0.014
Cyanide	mg/L	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Turbidity	NTU	-	3.8	10.2	11.5	7.5	40.7	9.6	26.9	3.1	0.9	4.7	1.2	357	74.8	1.5	3.4	4.3
Tannins & Lignins	mg/L	-											0.6			0.7		

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary - General Water Quality

Parameter	UNITS	PWQO	SW4 15-Oct-21	SW4 26-Apr-22	SW4 21-Jun-22	SW4 24-Apr-23	SW4 16-Aug-23	SW4 5-Oct-23	SW14 9-Apr-14	SW14 21-Apr-14	SW14 9-Jul-14	SW14 14-Oct-14	SW14 28-Apr-15	SW14 8-Jun-15	SW14 11-Jun-15	SW14 15-Jul-15	SW14 17-Nov-15	SW14 21-Apr-16
pH -Lab	pH units	6.5-8.5	8.16	8.33	8.25	8.23	8.18	8.15	8.06	8.37	7.63	8.12	8.25	8.17	8.12	8.06	8.12	8.2
Conductivity	uS/cm	-	720	638	774	608	837	854	377	533	690	814	635	685	728	769	735	651
BOD	mg/L	-	< 3	< 3	< 3	< 3	<3	<3	< 3	< 3	23	< 3	< 2	< 3	< 2	< 3	2	< 2
COD	mg/L	-	31	6	18	11	24	23	10	12	82	14	19	29	16	26	6	9
Total Dissolved Solids	mg/L	-	415	342	406	322	494	520	206	287	453	440	333	367	375	422	420	363
Total Suspended Solids	mg/L	-	6	< 3	3	4	4	10	< 3	5	611	10	3	3	10	15	7	< 3
Alkalinity	mg/L	-	326	268	290	267	347	363	170	241	165	277	241	270	286	292	224	239
Hardness	mg/L	-	360	300	324	292	414	445	191	248	262	331	244	292	269	349	309	289
Ammonia	mg/L	-	0.05	0.12	0.12	0.35	0.24	0.62	< 0.01	< 0.01	0.58	0.02	0.01	0.06	< 0.01	0.09	< 0.01	0.09
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	**0.03**	0.01	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-	129	108	117	92.8	149	160	70.4	90.5	87.1	117	86.6	105	95.9	124	110	104
Chloride	mg/L	-	39	29.6	51.2	31.7	60.2	64.8	12.3	22.8	119	80.9	48	46.4	54.2	59.6	63.8	51.9
DOC	mg/L	-	10.8	6.9	7.2	4	6.6	8.2	4.9	5.7	11.3	7.1	5.1	9.4	8.1	5	6.3	6.1
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	< 0.1	0.1	0.2	0.2	0.2	0.1	0.1	< 0.1	0.1	0.1
Iron	mg/L	0.3	0.156	0.029	0.029	0.058	0.134	0.082	0.04	0.052	**0.857**	0.02	0.159	0.16	0.096	**2.61**	0.248	0.047
Magnesium	mg/L	-	9.1	7.2	7.92	5.92	10.1	10.9	3.7	5.34	10.8	9.16	6.72	7.32	7.13	9.3	8.21	7.32
Manganese	mg/L	-	0.022	0.003	0.006	0.012	0.038	0.02	0.015	0.025	0.86	0.023	0.047	0.03	0.039	0.9	0.036	0.028
Nitrate	mg/L	-	< 0.05	1.89	4.24	1.22	0.54	<0.05	0.4	< 0.1	< 0.1	< 0.1	1.7	0.5	1.2	0.7	3.1	1
Nitrite	mg/L	-	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TKN	mg/L	-	0.8	0.5	0.8	1	0.7	0.7	0.26	0.4	1.3	0.6	0.6	0.7	0.9	1.2	0.8	0.5
Sodium	mg/L	-	22.9	18.6	20.9	16	37.8	31.2	8.1	12.9	78.6	41.5	23.2	32.1	29.6	36.9	40.1	32.6
Sulphate	mg/L	-	17	15	17	14	23	33	6	9	4	22	14	10	11	8	45	16
Phenols	mg/L	0.001	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	< 0.001	< 0.001	**0.002**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	0.03	**0.05**	0.01	0.03	0.02	0.02	0.03	0.01	0.02	**0.62**	0.03	0.02	0.02	**0.04**	**0.12**	**0.06**	0.01
Potassium	mg/L	-	1.9	2.1	1.5	1.7	2.8	2.1	1.7	1.4	51.9	2.3	2.6	1.5	0.5	1.9	3.8	2.7
Aluminum	mg/L	0.075	0.04	0.07	0.03	0.03	**0.14**	**0.08**	0.07	0.06	**0.11**	0.06	**0.08**	**0.12**	0.07	**1.17**	**0.17**	0.04
Antimony	mg/L	-	0.0003	0.0003	0.0004	0.0002	0.0002	0.0004	< 0.0001	< 0.0001	0.0005	0.0002	0.0002	0.0001	0.0002	0.0002	< 0.0001	< 0.0001
Arsenic	mg/L	0.1	0.0004	0.0002	0.0003	0.0002	0.0004	0.0003	0.0028	0.0002	0.0008	0.0005	0.0003	0.0005	0.0003	0.0007	0.0003	0.0002
Barium	mg/L	-	0.051	0.042	0.045	0.035	0.067	0.063	0.021	0.029	0.082	0.042	0.04	0.033	0.028	0.07	0.045	0.034
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.022	0.014	0.017	0.012	0.027	0.018	0.006	0.01	**0.657**	0.024	0.011	0.019	0.01	0.024	0.02	0.006
Cadmium	mg/L	0.0002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	0.00003	< 0.00002	0.00006	< 0.00002	< 0.00002	0.00016	< 0.00002	< 0.00002
Chromium	mg/L	0.1	< 0.001	< 0.001	< 0.001	0.002	<0.001	<0.001	0.0008	< 0.0002	< 0.0002	0.0003	0.0002	0.0002	< 0.0002	0.0013	< 0.0002	0.0002
Cobalt	mg/L	0.0006	0.0002	0.0001	0.0002	0.0001	0.0004	0.0004	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	0.005	0.0006	0.0008	0.0007	0.0007	0.0011	0.0008	0.0006	0.0002	0.0015	0.0007	0.0007	0.0009	0.0001	0.0029	0.0007	0.0005
Lead	mg/L	0.025	0.00009	0.00017	0.00004	0.00007	0.00015	0.00006	0.00003	0.00005	0.00069	0.00003	0.00008	< 0.00002	< 0.00002	0.00125	0.0001	< 0.00002
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0002	0.0001	0.0002	0.0001	0.0003	0.0001	0.0002	0.0001	0.0003	0.0001	0.0007	0.0002	0.0001	0.0001	0.0002	0.0002
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	0.001	0.0005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002	0.00006	< 0.00002	< 0.00002
Strontium	mg/L	-	0.359	0.307	0.317	0.252	0.418	0.397			0.259	0.353	0.259	0.303	0.27	0.384	0.32	0.293
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0005	0.0004	0.0006	0.0004	0.0007	0.0005	0.0004	0.0007	0.0008	0.0004	0.0002	0.0005	0.0004	0.0019	0.0004	0.0002
Zinc	mg/L	0.03	< 0.005	< 0.005	< 0.005	< 0.005	0.007	0.006	< 0.005	< 0.005	**0.05**	< 0.005	0.02	< 0.005	< 0.005	**0.2**	**0.044**	< 0.005
Cyanide	mg/L	0.005	< 0.005		< 0.005	< 0.005	<0.005	<0.005										
Turbidity	NTU	-	5.4			3.5	3.7	22.2										
Tannins & Lignins	mg/L	-																

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary - General Water Quality

Parameter	UNITS	PWQO	SW14 26-May-16	SW14 8-Jun-16	SW14 24-Apr-17	SW14 23-May-17	SW14 22-Jun-17	SW14 24-Aug-17	SW14 17-Oct-17	SW14 25-Apr-18	SW14 28-Jun-18	SW14 17-Jul-18	SW14 22-Aug-18	SW14 11-Oct-18	SW14 24-Apr-19	SW14 5-Jun-19	SW14 17-Jul-19	SW14 6-Aug-19
pH -Lab	pH units	6.5-8.5	7.75	7.82	8.21	7.95	7.91	7.92	8.12	8.24	8.05	7.3	7.68	7.93	8.07	8.15	7.87	7.7
Conductivity	uS/cm	-	1190	1110	683	532	537	498	783	438	457		722	871	449		938	
BOD	mg/L	-	26	>18	<3	<3	<3	<3	17	< 3	< 3		8	10	4		8	
COD	mg/L	-	88	389	26	25	33	32	23	16	34		65	61	30		44	
Total Dissolved Solids	mg/L	-	685	752	358	262	284	252	415	233	250		377	460	229		494	
Total Suspended Solids	mg/L	-	260	3000	6	104	4	6	6	5	16		30	20	16		85	
Alkalinity	mg/L	-	479	444	202	212	216	190	296	175	155		188	212	168		281	
Hardness	mg/L	-	518	725	233	206	225	210	332	190	180		193	253	202		370	
Ammonia	mg/L	-	0.65	1.97	0.03	0.11	0.02	0.04	0.06	0.03	0.11	0.09	0.54	0.05	0.04	0.02	1.02	0.23
Un-ionized Ammonia	mg/L	0.02	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01		< 0.01	
Calcium	mg/L	-	181	260	85.2	72.1	85.4	67.2	119	67.9	59.9		67.8	94.7	71.4		121	
Chloride	mg/L	-	91.2	98.7	75	26.4	29.7	33.9	38.9	26.6	50.6		115	142	24.9		84.8	
DOC	mg/L	-	8.4	7.5	7.9	9	10.4	11.9	8	5.1	12.3		12.2	11.5	6.9		11.6	
Fluoride	mg/L	-	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1		< 0.1	
Iron	mg/L	0.3	**2.73**	**22.5**	0.129	0.176	0.254	**0.322**	0.159	0.071	**0.771**		**1.6**	**0.847**	0.147		**3.18**	
Magnesium	mg/L	-	16	18.6	6.11	6.18	7.02	5.76	8.43	4.97	7.48		7.88	11	4.04		10.8	
Manganese	mg/L	-	13.6	3.86	0.041	0.161	0.105	0.047	0.084	0.01	0.075		0.491	0.342	0.019		2.71	
Nitrate	mg/L	-	0.1	0.1	0.7	0.2	0.06	< 0.05	0.63	0.67	0.08		< 0.05	< 0.05	0.66		0.12	
Nitrite	mg/L	-	< 0.1	< 0.1	< 0.1	0.14	< 0.05	< 0.05	0.24	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05		< 0.05	
TKN	mg/L	-	3.4	21	0.8	0.9	0.9	0.9	0.6	0.5	1.3		2.7	1.7	1.1		2.2	
Sodium	mg/L	-	73.3	73.3	44.4	19.1	24.1	24	34.2	16.2	34.7		62.3	83.5	13.9		65	
Sulphate	mg/L	-	17	4	19	9	6	4	33	11	1		2	5	11		33	
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	**0.011**	**0.008**	**0.009**	**0.009**	< 0.001	< 0.001		**0.005**	**0.004**	< 0.002		< 0.002	
Phosphorus	mg/L	0.03	**0.31**	**5.36**	**0.04**	**0.05**	**0.05**	**0.04**	0.03	0.03	**0.06**		**0.31**	**0.16**	**0.05**		**0.13**	
Potassium	mg/L	-	2	1.6	2.8	1.7	1.8	2.1	3.6	2	2		6	6.7	2.4		4.4	
Aluminum	mg/L	0.075	**0.18**	**4.59**	**0.11**	**0.09**	**0.1**	0.04	0.06	0.07	0.04		0.05	**0.09**	0.05		0.07	
Antimony	mg/L	-	0.0001	0.0001	< 0.0001	0.0004	0.0005	0.0003	< 0.0001	< 0.0001	0.0002		< 0.0001	0.0001	0.0006		0.0003	
Arsenic	mg/L	0.1	0.0016	0.0023	0.0005	0.0004	0.0006	0.0006	0.0005	< 0.0001	0.0009		0.0006	0.0005	0.0002		0.0011	
Barium	mg/L	-	0.121	0.263	0.036	0.036	0.043	0.026	0.047	0.03	0.033		0.048	0.072	0.029		0.072	
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002		< 0.002	
Boron	mg/L	0.2	0.07	0.088	0.016	0.007	0.023	0.025	0.027	0.01	0.025		0.045	0.053	0.006		0.063	
Cadmium	mg/L	0.0002	< 0.00002	**0.0004**	< 0.000014	< 0.000014	< 0.000014	< 0.000014	0.00003	0.000029	< 0.000015		0.000125	0.000042	< 0.000015		< 0.000015	
Chromium	mg/L	0.1	0.0003	0.0037	< 0.0015	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001		0.001	< 0.001	< 0.001		< 0.001	
Cobalt	mg/L	0.0006	< 0.005	**0.008**	< 0.0001	0.0002	0.0001	0.0002	< 0.0001	< 0.0001	0.0003		0.0003	0.0002	< 0.0001		**0.0007**	
Copper	mg/L	0.005	0.0017	**0.0131**	0.0005	0.0008	0.0007	0.0002	**0.0051**	0.0012	0.0004		**0.0063**	0.0047	0.0014		0.0008	
Lead	mg/L	0.025	0.00018	0.0102	< 0.00002	0.00004	0.00005	< 0.00002	0.00038	0.00091	0.00005		0.00074	0.00031	0.00019		0.00009	
Mercury	mg/L	-	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002		< 0.00002	< 0.00002	< 0.00002		< 0.00002	
Molybdenum	mg/L	0.04	0.0003	0.0001	0.0004	0.0002	0.0002	< 0.0001	0.0003	0.0002	0.0002		0.0001	0.0001	0.0002		0.0002	
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01		< 0.01	
Selenium	mg/L	-	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001		< 0.001	
Silver	mg/L	0.0001	< 0.00002	< 0.00002	**0.00046**	< 0.00002	< 0.00002	< 0.00002	< 0.00002	**0.00057**	< 0.0001		< 0.0001	< 0.0001	< 0.0001		< 0.0001	
Strontium	mg/L	-	0.494	0.602	0.239	0.219	0.282	0.203	0.295	0.184	0.227		0.262	0.344	0.17		0.373	
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005		< 0.00005	
Vanadium	mg/L	-	0.0009	0.0146	0.0003	0.0003	0.0003	< 0.0001	0.0002	0.0002	0.0003		0.0002	0.0002	0.0003		0.0006	
Zinc	mg/L	0.03	0.009	**0.158**	0.023	**0.04**	**0.065**	< 0.005	< 0.005	0.013	0.016		0.022	0.021	0.01		0.018	
Cyanide	mg/L	0.005																
Turbidity	NTU	-																
Tannins & Lignins	mg/L	-																

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary - General Water Quality

Parameter	UNITS	PWQO	SW14 13-Aug-19	SW14 27-Aug-19	SW14 2-Oct-19	SW14 16-Oct-19	SW14 31-Oct-19	SW14 30-Apr-20	SW14 10-Jun-20	SW14 15-Oct-20	SW14 22-Oct-20	SW14 30-Nov-20	SW14 20-Apr-21	SW14 4-May-21	SW14 8-Jul-21	SW14 23-Sep-21	SW14 15-Oct-21	SW14 25-Oct-21
pH -Lab	pH units	6.5-8.5	8.14	7.47	7.96	7.95	8.01	8.01	7.84	7.64	8.09	8.07	8.32	8.13	8.09	7.91	8.03	7.98
Conductivity	uS/cm	-	749			739		647			1150		676				931	
BOD	mg/L	-	< 3			9		< 3			< 3		< 3				< 3	
COD	mg/L	-	50			155		21			27		8				57	
Total Dissolved Solids	mg/L	-	421			535		358			638		389				513	
Total Suspended Solids	mg/L	-	12			1210		16			14		3				44	
Alkalinity	mg/L	-	242			199		221			191		269				297	
Hardness	mg/L	-	261			270		265			339		308				348	
Ammonia	mg/L	-	0.09	0.27	0.09	0.46	0.13	0.03	0.56	0.23	0.04	0.05	0.02	0.03	0.06	0.09	0.05	0.04
Un-ionized Ammonia	mg/L	0.02	< 0.01			< 0.01		< 0.01			< 0.01		< 0.01				< 0.01	
Calcium	mg/L	-	90.4			195		95.6			118		112				123	
Chloride	mg/L	-	102			76.8		57.9			196		50.2				111	
DOC	mg/L	-	11.3			13.4		6.2			5.5		6.1				9.2	
Fluoride	mg/L	-	< 0.1			< 0.1		< 0.1			< 0.1		< 0.1				< 0.1	
Iron	mg/L	0.3	**1.23**			**24.1**		**0.431**			0.083		0.13				**0.341**	
Magnesium	mg/L	-	8.52			13.2		6.44			10.7		6.86				9.79	
Manganese	mg/L	-	0.715			2.75		0.257			0.011		0.086				0.275	
Nitrate	mg/L	-	0.09			0.1		0.56			< 0.05		0.63				< 0.05	
Nitrite	mg/L	-	< 0.05			< 0.05		< 0.05			< 0.05		< 0.05				0.07	
TKN	mg/L	-	1.5			3.3		0.6			1.5		0.4				1	
Sodium	mg/L	-	55.8			43.4		31			94.2		29.7				56.9	
Sulphate	mg/L	-	12			50		17			87		19				26	
Phenols	mg/L	0.001	< 0.002			< 0.002		< 0.002			< 0.002		< 0.002				< 0.002	
Phosphorus	mg/L	0.03	**0.13**			**0.64**		**0.05**			**0.12**		**0.06**				**0.06**	
Potassium	mg/L	-	4.6			9.8		2.5			9.8		1.7				6.6	
Aluminum	mg/L	0.075	0.05			0.06		0.06			0.05		0.07				0.03	
Antimony	mg/L	-	< 0.0001			0.0001		0.0004			0.0001		0.0003				0.0003	
Arsenic	mg/L	0.1	0.0008			0.0029		0.0003			0.0005		0.0002				0.0006	
Barium	mg/L	-	0.037			0.181		0.04			0.069		0.039				0.06	
Beryillium	mg/L	1.1	< 0.002			< 0.002		< 0.002			< 0.002		< 0.002				< 0.002	
Boron	mg/L	0.2	0.055			0.079		0.02			0.04		0.011				0.041	
Cadmium	mg/L	0.0002	< 0.000015			**0.000256**		< 0.000015			< 0.000015		< 0.000015				< 0.000015	
Chromium	mg/L	0.1	< 0.001			0.014		< 0.001			< 0.001		0.001				< 0.001	
Cobalt	mg/L	0.0006	0.0003			**0.0064**		0.0003			0.0001		0.0002				0.0003	
Copper	mg/L	0.005	0.0009			**0.0129**		0.0007			0.0011		0.0009				0.0005	
Lead	mg/L	0.025	0.00021			0.00975		0.0001			0.00003		0.00007				0.00008	
Mercury	mg/L	-	< 0.00002			< 0.00002		< 0.00002			< 0.00002		< 0.00002				< 0.00002	
Molybdenum	mg/L	0.04	0.0002			0.0002		0.0002			0.0006		0.0002				0.0003	
Nickel	mg/L	0.025	< 0.01			0.01		< 0.01			< 0.01		< 0.01				< 0.01	
Selenium	mg/L	-	< 0.001			< 0.001		< 0.001			< 0.001		< 0.001				< 0.001	
Silver	mg/L	0.0001	< 0.0001			< 0.0001		< 0.0001			< 0.0001		< 0.0001				< 0.0001	
Strontium	mg/L	-	0.279			0.467		0.241			0.332		0.276				0.374	
Thallium	mg/L	-	< 0.00005			0.00011		< 0.00005			< 0.00005		< 0.00005				< 0.00005	
Vanadium	mg/L	-	0.0006			0.0172		0.0006			0.0005		0.0004				0.0004	
Zinc	mg/L	0.03	0.01			**0.101**		< 0.005			0.006		0.013				0.005	
Cyanide	mg/L	0.005																
Turbidity	NTU	-																
Tannins & Lignins	mg/L	-																

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary - General Water Quality

Parameter	UNITS	PWQO	SW14 26-Apr-22	SW14 7-Jun-22	SW14 21-Jun-22	SW14 24-Apr-23	SW14 1-May-23	SW14 8-Jun-23	SW14 26-Jun-23	SW14 15-Aug-23	SW14 16-Aug-23	SW14 5-Oct-23	SW15 9-Apr-14	SW15 21-Apr-14	SW15 17-Jun-14	SW15 9-Jul-14	SW15 13-Aug-14	SW15 14-Oct-14
pH -Lab	pH units	6.5-8.5	8.22	8.06	8.08	8.21	8.11	7.93	8.07	7.97	7.95	8.13	7.87	7.17	9.1	7.98	8.43	8.39
Conductivity	uS/cm	-	620		768	624		1150			840	872	1790	1160	1020	865	752	463
BOD	mg/L	-	< 3		< 3	11		< 3			<3	<3	< 3	< 3	8	< 3	< 3	< 3
COD	mg/L	-	22		18	10		14			23	40	23	22	43	34	35	17
Total Dissolved Solids	mg/L	-	333		418	340		617			467	491	939	581	504	431	410	247
Total Suspended Solids	mg/L	-	< 3		7	< 3		4			3	62	13	7	9	35	8	14
Alkalinity	mg/L	-	248		255	241		434			301	243	259	162	66	65	77	85
Hardness	mg/L	-	277		293	260		435			337	283	364	227	98	88	94	98
Ammonia	mg/L	-	0.05	0.05	0.06	0.03	0.12	0.15	0.08	<0.05	0.14	0.21	0.12	< 0.01	0.04	0.08	0.05	0.04
Un-ionized Ammonia	mg/L	0.02	< 0.01		< 0.01	< 0.01		< 0.01			<0.01	<0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-	99.6		103	91.3		143			120	97.8	132	79.3	28.6	27.2	29.6	31.4
Chloride	mg/L	-	37.2		92.4	52.4		123			86.9	139	397	231	256	216	193	81.7
DOC	mg/L	-	6.2		7.7	3.5		4.8			7.8	9.3	5.2	5.8	5.7	6.2	5.7	6
Fluoride	mg/L	-	< 0.1		< 0.1	< 0.1		0.1			<0.1	<0.1	0.1	0.1	0.2	0.2	0.3	0.2
Iron	mg/L	0.3	0.063		0.126	0.044		**1.9**			0.198	0.14	0.139	0.19	0.272	**0.414**	0.289	**0.352**
Magnesium	mg/L	-	6.84		8.87	6.34		14.4			9.04	9.35	8.31	6.91	6.41	4.91	4.77	4.71
Manganese	mg/L	-	0.021		0.065	0.019		5.47			0.412	0.024	0.025	0.02	0.018	0.027	0.019	0.046
Nitrate	mg/L	-	0.86		1.56	0.46		< 0.05			0.07	0.17	0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nitrite	mg/L	-	< 0.05		< 0.05	< 0.05		< 0.05			<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TKN	mg/L	-	0.5		1	0.5		1			0.9	1.4	0.75	0.4	2.5	1.4	1.21	1
Sodium	mg/L	-	25		45.4	28.5		63.8			50.6	60.4	212	133	160	133	126	58.5
Sulphate	mg/L	-	13		11	14		3			12	27	27	29	8	5	4	15
Phenols	mg/L	0.001	< 0.001		< 0.001	< 0.001		< 0.001			<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	0.03	0.02		**0.05**	0.03		0.03			**0.04**	**0.06**	0.03	0.03	**0.18**	**0.06**	0.03	**0.05**
Potassium	mg/L	-	2.5		3.4	2.9		2.1			7.1	10.9	4.9	4.4	4.9	5.2	6.1	3.5
Aluminum	mg/L	0.075	0.05		0.02	0.02		0.06			**0.1**	0.07	**0.18**	0.06	0.04	**0.19**	0.04	**0.14**
Antimony	mg/L	-	0.0002		0.0003	0.0003		0.0002			0.0001	0.0004	0.0002	< 0.0001	0.0003	0.0002	0.0002	0.0003
Arsenic	mg/L	0.1	0.0002		0.0004	0.0002		0.0012			0.0006	0.0004	0.0037	0.0005	0.0017	0.0015	0.0018	0.001
Barium	mg/L	-	0.037		0.036	0.034		0.068			0.061	0.061	0.083	0.056	0.019	0.028	0.028	0.026
Beryillium	mg/L	1.1	< 0.002		< 0.002	< 0.002		< 0.002			<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2	0.015		0.033	0.019		0.073			0.041	0.053	0.028	0.055	0.084	0.069	0.063	0.052
Cadmium	mg/L	0.0002	< 0.000015		< 0.000015	< 0.000015		< 0.000015			<0.000015	<0.000015	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Chromium	mg/L	0.1	< 0.001		0.001	0.002		< 0.001			<0.001	<0.001	0.0008	< 0.0002	0.0003	< 0.0002	0.0009	0.0005
Cobalt	mg/L	0.0006	0.0001		0.0001	0.0001		**0.0016**			0.0004	0.0003	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	0.005	0.0007		0.0006	0.0005		0.0004			0.0008	0.0007	0.0039	0.0011	0.0016	0.0013	0.0013	0.0008
Lead	mg/L	0.025	0.00003		0.00003	< 0.00002		0.00008			0.00007	0.00005	0.00026	0.00015	0.00009	0.00037	0.00006	0.00027
Mercury	mg/L	-	< 0.00002		< 0.00002	< 0.00002		< 0.00002			<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04	0.0001		0.0002	0.0002		0.0002			0.0002	0.0003	0.0007	0.001	0.0009	0.0005	0.0007	0.0008
Nickel	mg/L	0.025	< 0.01		< 0.01	< 0.01		< 0.01			0.001	0.0008	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-	< 0.001		< 0.001	< 0.001		< 0.001			<0.001	<0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.0001		< 0.0001	< 0.0001		< 0.0001			<0.0001	<0.0001	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	-	0.285		0.314	0.254		0.394			0.347	0.285			0.186	0.154	0.173	0.15
Thallium	mg/L	-	< 0.00005		< 0.00005	< 0.00005		< 0.00005			<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-	0.0003		0.0003	0.0002		0.0006			0.0003	0.0005	0.0008	0.0003	0.0005	0.0005	0.0009	0.0004
Zinc	mg/L	0.03	0.007		< 0.005	< 0.005		< 0.005			<0.005	<0.005	0.005	< 0.005	0.009	< 0.005	< 0.005	0.008
Cyanide	mg/L	0.005				< 0.005		< 0.005			<0.005	<0.005						
Turbidity	NTU	-				0.9		12.3			1.6	4						
Tannins & Lignins	mg/L	-				0.6		1.2			0.6	0.8						

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary - General Water Quality

Parameter	UNITS	PWQO	SW15 20-Apr-15	SW15 27-Apr-15	SW15 8-Jun-15	SW15 11-Jun-15	SW15 11-Oct-16	SW15 24-Apr-17	SW15 25-May-17	SW15 22-Jun-17	SW15 24-Aug-17	SW15 17-Oct-17	SW15 25-Apr-18	SW15 28-Jun-18	SW15 22-Aug-18	SW15 10-Oct-18	SW15 24-Apr-19	SW15 5-Jun-19
pH -Lab	pH units	6.5-8.5	8.1	7.84	8.22	7.93	8.32	8.4	8.24	8.05	7.62	7.87	8.22	7.73	7.68	7.99	8.09	7.96
Conductivity	uS/cm	-	1700	1840	1030	1210	641	1660	730	1030	536	1360	948	1100	1450	944	958	
BOD	mg/L	-	< 3	4	< 3	< 2	12	<3	<3	<3	6	<3	< 3	< 3	8	3	< 3	
COD	mg/L	-	20	12	31	13	11	35	27	29	63	47	42	60	93	33	36	
Total Dissolved Solids	mg/L	-	897	953	535	619	361	793	351	562	459	814	531	579	948	487	493	
Total Suspended Solids	mg/L	-	5	874	10	14	40	9	64	28	640	172	7	50	165	6	4	
Alkalinity	mg/L	-	198	297	184	251	185	107	215	312	203	312	215	99	189	129	163	
Hardness	mg/L	-	316	461	198	229	200	149	173	273	642	589	230	120	288	171	208	
Ammonia	mg/L	-	0.05	< 0.01	0.05	< 0.01	0.07	0.02	0.04	< 0.01	0.13	0.07	0.05	0.07	0.1	0.09	0.04	0.45
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Calcium	mg/L	-	114	162	71.3	81.6	65	43	58.9	110	237	211	77.9	32.1	171	53.2	76.1	
Chloride	mg/L	-	390	363	186	206	36.8	385	75.1	95.6	28	120	164	271	330	197	183	
DOC	mg/L	-	3.9	2.5	5.2	5.1	4.6	4.6	5.4	8.3	16.9	8.7	7.1	10.8	8.9	6	6.1	
Fluoride	mg/L	-	0.2	0.2	0.2	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Iron	mg/L	0.3	0.218	**0.929**	0.287	0.169	0.048	0.114	**0.513**	**0.486**	**8.24**	**4.75**	0.096	**0.446**	**9.76**	**0.302**	0.191	
Magnesium	mg/L	-	7.39	13.5	4.71	6.01	11.8	8.82	6.35	10.4	12.4	14.9	8.64	9.6	16.1	9.24	5.84	
Manganese	mg/L	-	0.063	0.569	0.009	0.011	0.027	0.005	0.106	0.281	0.611	1.98	0.004	0.168	0.754	0.038	0.046	
Nitrate	mg/L	-	0.4	< 0.1	< 0.1	0.1	< 0.1	0.1	0.05	0.05	0.11	0.05	1.01	< 0.05	< 0.05	< 0.05	< 0.05	
Nitrite	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
TKN	mg/L	-	0.7	0.6	0.9	1	0.8	1.2	0.5	0.8	2.3	1.2	1	1.9	11.1	0.9	1	
Sodium	mg/L	-	228	197	128	137	49.7	247	61.2	119	14.5	106	98.2	191	232	126	108	
Sulphate	mg/L	-	34	37	31	36	85	38	19	37	16	162	39	6	73	15	15	
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.006**	**0.002**	**0.002**	**0.008**	**0.015**	**0.004**	< 0.001	< 0.001	**0.01**	**0.006**	< 0.002	
Phosphorus	mg/L	0.03	**0.04**	0.03	**0.05**	**0.04**	**0.05**	0.02	0.03	**0.05**	**0.47**	**0.24**	0.03	**0.06**	**0.81**	0.03	**0.05**	
Potassium	mg/L	-	3.2	1.3	2.5	1.6	1.7	5.9	1.2	1.9	20.4	6.3	15.2	9.4	2.4	5.1	7.3	
Aluminum	mg/L	0.075	**0.16**	0.06	**0.27**	**0.2**	0.04	0.03	**0.11**	**0.24**	**4.4**	**0.63**	**0.1**	0.03	**2.38**	0.04	0.05	
Antimony	mg/L	-	0.0004	0.0001	0.0008	0.0005	0.0001	0.0003	0.0001	0.0005	0.0003	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	
Arsenic	mg/L	0.1	0.0004	0.0003	0.0006	0.0004	0.0004	0.0019	0.0006	0.001	0.0025	0.0022	0.0007	0.0012	0.0027	0.0008	0.0005	
Barium	mg/L	-	0.072	0.14	0.051	0.054	0.076	0.046	0.032	0.066	0.155	0.124	0.053	0.037	0.16	0.056	0.052	
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Boron	mg/L	0.2	0.037	0.03	0.048	0.04	< 0.005	0.073	0.018	0.067	0.072	0.106	0.142	0.111	0.144	0.09	0.047	
Cadmium	mg/L	0.0002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.000014	< 0.000014	0.000016	0.000157	0.000071	< 0.000015	0.000071	**0.000255**	0.000037	< 0.000015	
Chromium	mg/L	0.1	0.0003	< 0.0002	0.0007	0.0004	< 0.0002	< 0.0015	< 0.001	< 0.001	0.008	0.001	< 0.001	< 0.001	0.006	< 0.001	0.001	
Cobalt	mg/L	0.0006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	0.0002	0.0003	0.0005	**0.0041**	**0.0037**	0.0001	0.0004	**0.0026**	0.0001	0.0002	
Copper	mg/L	0.005	0.0031	0.0014	0.0036	0.002	0.0006	0.0023	0.0014	0.0024	**0.0174**	**0.0098**	0.0021	**0.0096**	**0.0164**	**0.0054**	0.0021	
Lead	mg/L	0.025	0.0002	0.00006	0.00041	0.00018	0.00225	< 0.00002	0.00018	0.00034	0.00812	0.00161	0.00012	0.0004	0.00479	0.00033	0.00014	
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	
Molybdenum	mg/L	0.04	0.001	< 0.0001	0.001	0.0012	0.0002	0.0008	0.0006	0.0007	0.0009	0.0015	0.0007	0.0002	0.0007	0.0004	0.0005	
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Silver	mg/L	0.0001	**0.00029**	< 0.00002	< 0.00002	< 0.00002	< 0.00002	**0.00043**	0.00002	0.00002	0.00004	0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	
Strontium	mg/L	-	0.419	0.898	0.268	0.297	0.216	0.286	0.195	0.417	0.497	0.518	0.252	0.199	0.551	0.247	0.227	
Thallium	mg/L	-	0.00022	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00008	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	
Vanadium	mg/L	-	0.0002	< 0.0001	0.0009	0.0004	0.0002	< 0.0001	0.0002	0.0006	0.0082	0.0012	0.0001	0.0002	0.0055	0.0001	0.0002	
Zinc	mg/L	0.03	0.012	< 0.005	0.006	0.005	< 0.005	< 0.005	0.011	**0.103**	**0.085**	**0.063**	0.005	**0.037**	**0.072**	**0.032**	0.023	
Cyanide	mg/L	0.005														< 0.005	< 0.005	
Turbidity	NTU	-														2.6	330	
Tannins & Lignins	mg/L	-																

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary - General Water Quality

Parameter	UNITS	PWQO	SW15 17-Jul-19	SW15 9-Oct-19	SW15 31-Oct-19	SW15 30-Apr-20	SW15 24-Jun-20	SW15 22-Oct-20	SW15 30-Nov-20	SW15 20-Apr-21	SW15 4-May-21	SW15 15-Jun-21	SW15 8-Jul-21	SW15 23-Sep-21	SW15 15-Oct-21	SW15 26-Apr-22	SW15 7-Jun-22	SW15 24-Apr-23
pH -Lab	pH units	6.5-8.5	7.84	7.87	8.14	7.88	7.73	8.09	7.8	8	8.11	7.7	8.13	8.02	7.72	8.03	7.79	8.06
Conductivity	uS/cm	-	752	1110		1060	1340	1010		1810		854			873	2140		2090
BOD	mg/L	-	12	< 3		5	6	4		< 3		24			5	< 3		22
COD	mg/L	-	83	76		56	65	53		54		101			89	34		147
Total Dissolved Solids	mg/L	-	359	626		585	665	552		1003		484			469	1226		1187
Total Suspended Solids	mg/L	-	80	62		150	340	19		28		89			84	285		3900
Alkalinity	mg/L	-	111	268		293	141	147		331		225			142	233		319
Hardness	mg/L	-	87	386		344	163	239		491		234			161	523		607
Ammonia	mg/L	-	0.08	0.07	0.09	0.03	0.18	0.05	0.12	0.26	1.11	0.15	0.17	0.06	0.08	1.35	0.08	0.19
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01		0.01		< 0.01			< 0.01	**0.03**		< 0.01
Calcium	mg/L	-	20.6	133		107	44.3	78.3		171		71.3			48.5	191		367
Chloride	mg/L	-	135	190		141	309	185		342		143			182	497		328
DOC	mg/L	-	11.5	8.5		5.4	6.1	4.9		6.8		31.5			7.9	2.5		3.5
Fluoride	mg/L	-	< 0.1	< 0.1		0.1	< 0.1	< 0.1		< 0.1		< 0.1			< 0.1	< 0.1		< 1
Iron	mg/L	0.3	0.15	0.022		**2.16**	**1.1**	**0.406**		**2.53**		**2.75**			**7.59**	**4.04**		**7.69**
Magnesium	mg/L	-	7.58	13		18.6	11.8	10.5		15.5		13.6			9.74	11		28.8
Manganese	mg/L	-	0.075	0.003		0.105	0.073	0.044		0.552		0.266			0.219	0.184		0.476
Nitrate	mg/L	-	< 0.05	< 0.05		0.09	0.21	< 0.05		< 0.05		0.1			< 0.05	1.45		14
Nitrite	mg/L	-	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05		< 0.05		< 0.05			0.1	< 0.05		< 0.5
TKN	mg/L	-	1.5	2.5		1.6	2.4	1.5		2.3		3.1			3.4	1.9		5
Sodium	mg/L	-	118	96.9		92	193	109		203		90.1			110	311		167
Sulphate	mg/L	-	4	19		30	12	67		55		5			13	63		219
Phenols	mg/L	0.001	< 0.002	< 0.002		< 0.002	< 0.001	< 0.002		< 0.002		< 0.002			< 0.002	< 0.001		< 0.001
Phosphorus	mg/L	0.03	**0.04**	**0.37**		**0.22**	**0.06**	**0.07**		**0.21**		**0.44**			**0.23**	**0.39**		**0.62**
Potassium	mg/L	-	8.3	12.9		2.6	7.8	8.1		8.3		9			11.8	7		42.2
Aluminum	mg/L	0.075	0.02	**0.09**		0.07	0.03	0.02		**0.09**		0.06			0.01	**0.09**		0.06
Antimony	mg/L	-	0.0002	0.0001		0.0003	0.0002	0.0001		0.0004		0.0001			0.0005	0.0006		0.0008
Arsenic	mg/L	0.1	0.0008	0.0016		0.0006	0.0023	0.0008		0.0012		0.0016			0.0034	0.0011		0.0024
Barium	mg/L	-	0.024	0.069		0.054	0.055	0.059		0.111		0.042			0.05	0.122		0.267
Beryillium	mg/L	1.1	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002		< 0.002		< 0.002			< 0.002	< 0.002		< 0.002
Boron	mg/L	0.2	**0.203**	0.089		0.055	**0.281**	0.149		**0.265**		0.145			**0.215**	0.137		**0.999**
Cadmium	mg/L	0.0002	< 0.000015	0.000049		< 0.000015	< 0.000015	< 0.000015		< 0.000015		< 0.000015			0.000025	0.000069		0.000175
Chromium	mg/L	0.1	< 0.001	< 0.001		< 0.001	< 0.001	0.001		0.001		0.002			0.001	0.003		0.011
Cobalt	mg/L	0.0006	0.0002	**0.002**		0.0005	0.0002	0.0002		**0.0021**		0.0003			**0.0009**	**0.0017**		**0.0045**
Copper	mg/L	0.005	0.0017	**0.0055**		0.0011	0.0007	0.0004		0.001		0.002			0.002	**0.0057**		**0.0182**
Lead	mg/L	0.025	0.00012	0.00329		0.00059	0.00023	0.00022		0.00035		0.00036			0.00082	0.00437		0.0104
Mercury	mg/L	-	< 0.00002	< 0.00002		< 0.00002	< 0.00002	< 0.00002		< 0.00002		< 0.00002			< 0.00002	< 0.00002		< 0.00002
Molybdenum	mg/L	0.04	0.0001	0.0005		0.0003	0.0006	0.0005		0.0006		0.0001			0.0005	0.0006		0.0008
Nickel	mg/L	0.025	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01		< 0.01		< 0.01			< 0.01	< 0.01		0.01
Selenium	mg/L	-	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001		0.001		< 0.001			< 0.001	< 0.002		< 0.002
Silver	mg/L	0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001		< 0.0001		< 0.0001			< 0.0001	< 0.0001		< 0.0001
Strontium	mg/L	-	0.131	0.404		0.414	0.237	0.324		0.578		0.308			0.282	0.656		1.1
Thallium	mg/L	-	< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005		< 0.00005		< 0.00005			< 0.00005	< 0.0001		< 0.0001
Vanadium	mg/L	-	< 0.0001	0.0032		0.0008	0.0005	0.0002		0.0007		0.0006			0.0015	0.003		0.0082
Zinc	mg/L	0.03	0.01	< 0.005		0.01	0.011	< 0.005		0.012		0.021			0.012	0.029		**0.162**
Cyanide	mg/L	0.005																< 0.005
Turbidity	NTU	-																576
Tannins & Lignins	mg/L	-																

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary - General Water Quality

Parameter	UNITS	PWQO	SW15 1-May-23	SW15 8-Jun-23	SW15 26-Jun-23	SW18 20-Apr-15	SW18 28-Apr-15	SW18 8-Jun-15	SW18 11-Jun-15	SW18 15-Jul-15	SW18 17-Nov-15	SW18 21-Apr-16	SW18 26-May-16	SW18 8-Jun-16	SW18 24-Apr-17	SW18 23-May-17	SW18 22-Jun-17	SW18 24-Aug-17
pH -Lab	pH units	6.5-8.5	8.15		7.84	8.26	7.94	8.19	7.74	7.41	7.96	7.82	7.91	8.04	8.13	8.18	7.93	7.87
Conductivity	uS/cm	-				585	657	699	574	577	705	794	1010	1280	763	522	525	527
BOD	mg/L	-				3	< 2	< 3	< 2	< 3	3	3	5	13	<3	<3	<3	<3
COD	mg/L	-				11	23	26	38	36	16	29	47	41	35	22	33	29
Total Dissolved Solids	mg/L	-				318	351	370	288	304	394	426	598	731	393	253	277	304
Total Suspended Solids	mg/L	-				< 3	< 3	5	8	14	8	4	300	170	<3	<3	3	6
Alkalinity	mg/L	-				244	198	285	156	207	186	198	310	343	182	213	223	203
Hardness	mg/L	-				273	232	287	162	235	263	241	388	548	216	193	231	291
Ammonia	mg/L	-	2.58		<0.05	0.03	0.01	0.05	< 0.01	0.08	< 0.01	0.04	0.26	0.13	0.01	0.05	0.04	0.03
Un-ionized Ammonia	mg/L	0.02				< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Calcium	mg/L	-				99.5	80.1	103	54	82.2	90.7	82.9	138	200	76.5	68.9	84	105
Chloride	mg/L	-				27.4	82.6	44.5	82.5	48.6	80.2	121	143	189	111	24.3	24.2	35.1
DOC	mg/L	-				7.7	5.2	8.2	10.8	8.6	8.7	9.1	8.6	5.4	9.1	8.5	10.7	11.9
Fluoride	mg/L	-				0.1	< 0.1	0.1	0.1	< 0.1	0.1	0.1	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iron	mg/L	0.3				0.058	0.107	0.115	**0.387**	**1.14**	0.088	0.147	**4.87**	**1.09**	0.091	0.024	**0.307**	**0.625**
Magnesium	mg/L	-				5.98	7.74	6.99	6.52	7.28	8.9	8.29	10.7	11.9	6.08	4.98	6.02	7.84
Manganese	mg/L	-				0.008	0.024	0.017	0.156	0.577	0.017	0.063	1.6	0.729	0.028	0.022	0.103	0.672
Nitrate	mg/L	-				1.6	< 0.1	0.6	0.1	< 0.1	< 0.1	0.1	0.4	0.2	< 0.1	< 0.05	0.14	< 0.05
Nitrite	mg/L	-				< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05
TKN	mg/L	-				0.5	0.7	0.7	1	1.1	0.9	0.4	2.5	1.5	0.8	1.8	1	0.8
Sodium	mg/L	-				16.8	42.3	29.3	42.5	34.3	46	68.7	89	90.9	64.9	17.2	20.3	25.4
Sulphate	mg/L	-				13	15	11	6	4	49	18	21	29	22	9	6	5
Phenols	mg/L	0.001				< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.005**	**0.008**	**0.005**	**0.009**
Phosphorus	mg/L	0.03				0.02	**0.04**	0.02	**0.09**	**0.07**	**0.05**	0.02	**0.43**	**0.18**	**0.04**	0.01	**0.04**	**0.05**
Potassium	mg/L	-		Dry		1.6	5.1	1.3	0.9	1.4	8.1	6.9	2.2	2	4	1.3	1.7	2.7
Aluminum	mg/L	0.075				0.06	0.03	**0.1**	0.02	0.07	0.06	0.03	**1.15**	**0.33**	0.04	0.03	0.03	**0.22**
Antimony	mg/L	-				0.0001	0.0001	0.0003	0.0003	0.0003	< 0.0001	0.0001	0.0001	0.0002	< 0.0001	< 0.0001	0.0001	0.0001
Arsenic	mg/L	0.1				0.0002	0.0004	0.0003	0.0004	0.0006	0.0005	0.0004	0.001	0.0008	0.0007	0.0003	0.0007	0.0006
Barium	mg/L	-				0.032	0.03	0.034	0.022	0.051	0.04	0.036	0.084	0.105	0.031	0.026	0.029	0.073
Beryillium	mg/L	1.1				< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	0.2				0.011	0.025	0.016	0.032	0.039	0.041	0.027	0.052	0.021	0.023	0.007	0.016	0.027
Cadmium	mg/L	0.0002				< 0.00002	0.00017	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00006	0.00007	< 0.000014	< 0.000014	< 0.000014	0.000076
Chromium	mg/L	0.1				< 0.0002	< 0.0002	< 0.0002	0.0003	0.0006	0.0002	0.0003	0.0017	0.0006	< 0.0015	0.012	< 0.001	0.001
Cobalt	mg/L	0.0006				< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.0001	0.0002	0.0006
Copper	mg/L	0.005				0.0009	0.0005	0.0006	< 0.0001	< 0.0001	0.0007	0.0007	0.0038	**0.0053**	0.0004	0.0008	0.0005	**0.0059**
Lead	mg/L	0.025				0.00003	0.00003	< 0.00002	< 0.00002	< 0.00002	0.00005	0.00002	0.00199	0.00099	< 0.00002	0.00004	0.00003	0.00063
Mercury	mg/L	-				< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	0.04				0.0002	0.0005	0.0002	< 0.0001	< 0.0001	0.0006	0.0004	< 0.0001	0.0003	0.0006	0.0002	0.0002	0.0002
Nickel	mg/L	0.025				< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	-				< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001				**0.00017**	< 0.00002	< 0.00002	< 0.00002	0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	**0.00037**	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	-				0.264	0.254	0.3	0.172	0.264	0.287	0.279	0.377	0.523	0.223	0.199	0.249	0.298
Thallium	mg/L	-				0.0001	0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-				0.0003	0.0001	0.0006	0.0001	0.0003	0.0003	0.0001	0.0033	0.0012	0.0002	< 0.0001	0.0002	0.0005
Zinc	mg/L	0.03				< 0.005	< 0.005	< 0.005	< 0.005	0.017	< 0.005	< 0.005	**0.399**	**0.188**	**0.046**	**0.042**	0.005	**0.63**
Cyanide	mg/L	0.005																
Turbidity	NTU	-																
Tannins & Lignins	mg/L	-																

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary - General Water Quality

Parameter	UNITS	PWQO	SW18 17-Oct-17	SW18 25-Apr-18	SW18 28-Jun-18	SW18 22-Aug-18	SW18 11-Oct-18	SW18 24-Apr-19	SW18 5-Jun-19	SW18 17-Jul-19	SW18 6-Aug-19	SW18 13-Aug-19	SW18 27-Aug-19	SW18 10-Sep-19	SW18 2-Oct-19	SW18 8-Oct-19	SW18 16-Oct-19	SW18 31-Oct-19
pH -Lab	pH units	6.5-8.5	8.24	8.19	7.96	7.79	7.73	8.14	8.16	7.92	7.76	8.08	7.4	7.84	8	7.74	7.81	8.04
Conductivity	uS/cm	-	847	429	504	690	927	436		819		691				799		
BOD	mg/L	-	<3	< 3	< 3	5	86	< 3		11		4				4		
COD	mg/L	-	25	20	103	54	244	25		44		68				33		
Total Dissolved Solids	mg/L	-	451	231	274	365	490	226		411		368				424		
Total Suspended Solids	mg/L	-	3	5	10	14	400	6		300		20				16		
Alkalinity	mg/L	-	324	177	147	180	247	164		230		155				188		
Hardness	mg/L	-	357	179	178	193	246	197		294		190				229		
Ammonia	mg/L	-	0.03	0.03	0.06	0.1	0.17	0.03	0.02	1.15	0.19	0.13	2.12	1.39	0.16	0.52	0.77	0.05
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		0.02		0.02				0.02		
Calcium	mg/L	-	129	64.8	58.2	68.3	257	71		94.7		62.3				77.3		
Chloride	mg/L	-	44.9	27.2	68.9	112	146	25		87		124				139		
DOC	mg/L	-	6.3	5.2	14.9	11.9	16.8	4.9		12.1		11.3				9.3		
Fluoride	mg/L	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1		< 0.1				< 0.1		
Iron	mg/L	0.3	0.041	0.052	**0.97**	**1.44**	**9.12**	0.153		**2.99**		**1.1**				**1.41**		
Magnesium	mg/L	-	8.37	4.14	7.81	7.51	12.4	4.04		8.08		8.27				8.8		
Manganese	mg/L	-	0.005	0.006	0.26	0.628	1.16	0.023		1.91		0.341				0.748		
Nitrate	mg/L	-	1.78	0.64	< 0.05	< 0.05	< 0.05	0.67		0.05		0.06				< 0.05		
Nitrite	mg/L	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		0.05		< 0.05				< 0.05		
TKN	mg/L	-	0.5	0.5	1.6	1.7	10.4	0.8		2.4		2.7				1.6		
Sodium	mg/L	-	37.1	15.3	43.3	60.5	85.4	14		58.7		66.3				69.2		
Sulphate	mg/L	-	35	11	2	1	10	10		14		4				7		
Phenols	mg/L	0.001	**0.002**	< 0.001	**0.005**	**0.007**	**0.007**	< 0.002		< 0.002		< 0.002				< 0.002		
Phosphorus	mg/L	0.03	0.02	0.03	**0.14**	**0.18**	**1.58**	**0.04**		**0.14**		**0.25**				**0.09**		
Potassium	mg/L	-	2	2	4	5.5	7.7	2.4		4.9		9.1				7.2		
Aluminum	mg/L	0.075	0.07	0.06	0.07	0.05	**2.56**	0.05		0.06		0.03				0.06		
Antimony	mg/L	-	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0001		0.0003		0.0001				0.0002		
Arsenic	mg/L	0.1	0.0004	0.0002	0.0008	0.0005	0.0013	0.0002		0.0012		0.0005				0.0008		
Barium	mg/L	-	0.047	0.022	0.038	0.045	0.208	0.029		0.061		0.044				0.054		
Beryillium	mg/L	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002		< 0.002				< 0.002		
Boron	mg/L	0.2	0.018	0.008	0.032	0.046	0.067	0.005		0.061		0.052				0.046		
Cadmium	mg/L	0.0002	0.000041	< 0.000015	0.000072	0.000091	**0.000315**	< 0.000015		< 0.000015		< 0.000015				< 0.000015		
Chromium	mg/L	0.1	< 0.001	< 0.001	0.001	0.001	0.003	< 0.001		< 0.001		< 0.001				0.002		
Cobalt	mg/L	0.0006	< 0.0001	< 0.0001	0.0004	0.0003	**0.0023**	< 0.0001		0.0006		0.0002				0.0004		
Copper	mg/L	0.005	**0.006**	0.0005	**0.0068**	**0.0069**	**0.0172**	0.0011		0.0006		0.0009				0.0029		
Lead	mg/L	0.025	0.00036	0.00004	0.00038	0.00054	0.00375	0.00007		0.0001		0.00026				0.00006		
Mercury	mg/L	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002		< 0.00002		< 0.00002				< 0.00002		
Molybdenum	mg/L	0.04	0.0003	0.0002	0.0001	0.0001	0.0004	0.0002		0.0002		< 0.0001				0.0002		
Nickel	mg/L	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01		< 0.01				< 0.01		
Selenium	mg/L	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001		< 0.001				< 0.001		
Silver	mg/L	0.0001	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001		< 0.0001				< 0.0001		
Strontium	mg/L	-	0.291	0.158	0.235	0.257	0.53	0.17		0.305		0.26				0.253		
Thallium	mg/L	-	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005		< 0.00005		< 0.00005				< 0.00005		
Vanadium	mg/L	-	0.0004	0.0003	0.0004	0.0001	0.0073	0.0002		0.0006		0.0007				0.0003		
Zinc	mg/L	0.03	0.011	< 0.005	0.03	0.02	**0.228**	0.008		0.026		0.022				**0.103**		
Cyanide	mg/L	0.005																
Turbidity	NTU	-																
Tannins & Lignins	mg/L	-																

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary - General Water Quality

Parameter	UNITS	PWQO	SW18 30-Apr-20	SW18 15-Oct-20	SW18 22-Oct-20	SW18 30-Nov-20	SW18 20-Apr-21	SW18 4-May-21	SW18 15-Jun-21	SW18 8-Jul-21	SW18 11-Aug-21	SW18 23-Sep-21	SW18 15-Oct-21	SW18 25-Oct-21	SW18 26-Apr-22	SW18 7-Jun-22	SW18 21-Jun-22	SW18 5-Jul-22
pH -Lab	pH units	6.5-8.5	7.99	7.83	7.96	7.95	8.31	8.21	7.88	8.14	7.86	8.02	7.86	7.88	8.32	8.12	7.88	7.43
Conductivity	uS/cm	-	643		1140		676		1050		691		912		649		749	
BOD	mg/L	-	< 3		< 3		< 3		< 3		< 3		14		< 3		< 3	
COD	mg/L	-	25		< 5		9		55		42		146		23		33	
Total Dissolved Solids	mg/L	-	355		631		386		576		361		579		351		401	
Total Suspended Solids	mg/L	-	5		31		< 3		8		8		1400		< 3		10	
Alkalinity	mg/L	-	222		180		270		216		198		288		270		212	
Hardness	mg/L	-	254		331		305		274		199		401		288		207	
Ammonia	mg/L	-	0.03	0.07	0.05	0.04	0.02	0.02	0.19	0.03	0.19	0.08	0.14	0.04	0.1	2.51	0.05	0.19
Un-ionized Ammonia	mg/L	0.02	< 0.01		< 0.01		< 0.01		< 0.01		< 0.01		< 0.01		< 0.01		< 0.01	
Calcium	mg/L	-	91.4		112		111		90.2		65.8		142		104		69.8	
Chloride	mg/L	-	56.4		197		49		196		101		117		37		110	
DOC	mg/L	-	6.4		6		6.4		10.5		10.1		9.9		6		9.3	
Fluoride	mg/L	-	< 0.1		< 0.1		< 0.1		< 0.1		< 0.1		< 0.1		< 0.1		< 0.1	
Iron	mg/L	0.3	0.211		**0.683**		0.061		**1.07**		**1.12**		**21.8**		0.056		0.253	
Magnesium	mg/L	-	6.18		12.3		6.79		11.7		8.32		11.3		6.75		7.81	
Manganese	mg/L	-	0.114		0.243		0.029		0.252		1		22.3		0.011		0.149	
Nitrate	mg/L	-	0.74		< 0.05		0.69		0.08		0.09		< 0.05		1.23		0.87	
Nitrite	mg/L	-	< 0.05		< 0.05		< 0.05		< 0.05		< 0.05		< 0.05		< 0.05		< 0.05	
TKN	mg/L	-	0.6		2.5		0.4		1.8		1.5		5.6		0.8		1.1	
Sodium	mg/L	-	30		96.3		29.3		103		56.6		58.2		23.7		54.9	
Sulphate	mg/L	-	16		87		18		11		5		26		14		7	
Phenols	mg/L	0.001	< 0.002		< 0.002		< 0.002		**0.002**		< 0.002		< 0.002		< 0.001		< 0.001	
Phosphorus	mg/L	0.03	0.03		**0.25**		**0.04**		**0.12**		**0.1**		**1.06**		0.02		**0.06**	
Potassium	mg/L	-	2.4		13.4		1.6		5.6		3.3		8.1		2.3		4.3	
Aluminum	mg/L	0.075	0.06		0.04		**0.08**		0.07		0.03		0.03		0.06		0.02	
Antimony	mg/L	-	0.0004		0.0002		0.0001		0.0001		0.0004		0.0004		0.0003		0.0004	
Arsenic	mg/L	0.1	0.0002		0.0007		0.0002		0.0009		0.0007		0.005		0.0002		0.0005	
Barium	mg/L	-	0.037		0.068		0.038		0.051		0.043		0.394		0.038		0.035	
Beryillium	mg/L	1.1	< 0.002		< 0.002		< 0.002		< 0.002		< 0.002		< 0.002		< 0.002		< 0.002	
Boron	mg/L	0.2	0.018		0.048		0.011		0.058		0.072		0.058		0.013		0.047	
Cadmium	mg/L	0.0002	< 0.000015		0.000027		< 0.000015		< 0.000015		< 0.000015		**0.000242**		< 0.000015		< 0.000015	
Chromium	mg/L	0.1	< 0.001		0.001		< 0.001		0.002		< 0.001		0.006		< 0.001		< 0.001	
Cobalt	mg/L	0.0006	0.0002		0.0002		< 0.0001		0.0003		0.0004		**0.0109**		0.0001		0.0001	
Copper	mg/L	0.005	0.0007		0.0027		0.0007		0.0007		0.0003		**0.0054**		0.0009		0.0004	
Lead	mg/L	0.025	0.00006		0.00013		0.00004		0.00009		0.00006		0.00322		0.00005		0.00002	
Mercury	mg/L	-	< 0.00002		< 0.00002		< 0.00002		< 0.00002		< 0.00002		0.00002		< 0.00002		< 0.00002	
Molybdenum	mg/L	0.04	0.0002		0.0005		0.0002		0.0002		< 0.0001		0.0004		0.0001		< 0.0001	
Nickel	mg/L	0.025	< 0.01		< 0.01		< 0.01		< 0.01		< 0.01		< 0.01		< 0.01		< 0.01	
Selenium	mg/L	-	< 0.001		< 0.001		< 0.001		< 0.001		< 0.001		< 0.001		< 0.001		< 0.001	
Silver	mg/L	0.0001	< 0.0001		< 0.0001		< 0.0001		< 0.0001		< 0.0001		< 0.0001		< 0.0001		< 0.0001	
Strontium	mg/L	-	0.236		0.362		0.277		0.33		0.271		0.436		0.291		0.249	
Thallium	mg/L	-	< 0.00005		< 0.00005		< 0.00005		< 0.00005		< 0.00005		< 0.00005		< 0.00005		< 0.00005	
Vanadium	mg/L	-	0.0004		0.0006		0.0004		0.0007		0.0002		0.0123		0.0004		0.0002	
Zinc	mg/L	0.03	< 0.005		**0.053**		0.009		**0.047**		**0.059**		**0.112**		< 0.005		< 0.005	
Cyanide	mg/L	0.005																
Turbidity	NTU	-																
Tannins & Lignins	mg/L	-																

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

Surface Water Chemistry Summary - General Water Quality

Parameter	UNITS	PWQO	SW18 17-Oct-22	SW18 24-Apr-23	SW18 1-May-23	SW18 8-Jun-23	SW18 26-Jun-23	SW18 15-Aug-23	SW18 16-Aug-23	SW18 5-Oct-23
pH -Lab	pH units	6.5-8.5	7.83	8.31	8.19	7.95	8.05	7.52	7.13	8.07
Conductivity	uS/cm	-	1200	643		1030			678	897
BOD	mg/L	-	< 3	< 3		< 3			3	<3
COD	mg/L	-	52	9		44			64	52
Total Dissolved Solids	mg/L	-	641	349		525			362	534
Total Suspended Solids	mg/L	-	6	< 3		64			8	10
Alkalinity	mg/L	-	213	272		251			183	207
Hardness	mg/L	-	306	290		277			195	291
Ammonia	mg/L	-	0.18	0.01	0.16	0.21	0.14	0.07	0.77	0.18
Un-ionized Ammonia	mg/L	0.02	< 0.01	< 0.01		< 0.01			0.02	<0.01
Calcium	mg/L	-	94.4	96.4		84.6			67.3	97.4
Chloride	mg/L	-	237	43.8		176			103	168
DOC	mg/L	-	4.1	5.6		5.7			10.4	10.6
Fluoride	mg/L	-	< 0.1	< 0.1		0.1			<0.1	<0.1
Iron	mg/L	0.3	0.073	0.031		**1.01**			**1.76**	**0.648**
Magnesium	mg/L	-	11.2	6.12		10.3			6.43	11.7
Manganese	mg/L	-	0.023	0.011		0.5			0.82	0.24
Nitrate	mg/L	-	0.1	0.84		< 0.05			0.09	<0.05
Nitrite	mg/L	-	< 0.05	< 0.05		< 0.05			<0.05	<0.05
TKN	mg/L	-	3	0.5		1.8			1.4	1.7
Sodium	mg/L	-	105	23.9		86.5			53.4	82.8
Sulphate	mg/L	-	47	14		6			4	29
Phenols	mg/L	0.001	< 0.001	< 0.001		< 0.001			**0.004**	<0.001
Phosphorus	mg/L	0.03	**0.19**	**0.04**		**0.1**			**0.1**	**0.09**
Potassium	mg/L	-	17.7	2.2		8.6			14.1	20.3
Aluminum	mg/L	0.075	0.04	0.02		0.03			0.03	**0.11**
Antimony	mg/L	-	0.0004	0.0001		0.0003			0.0001	0.0004
Arsenic	mg/L	0.1	0.0004	0.0002		0.0008			0.0007	0.0005
Barium	mg/L	-	0.056	0.035		0.053			0.06	0.057
Beryillium	mg/L	1.1	< 0.002	< 0.002		< 0.002			<0.0001	<0.0001
Boron	mg/L	0.2	0.091	0.012		0.074			0.068	**0.23**
Cadmium	mg/L	0.0002	< 0.000028	< 0.000015		< 0.000015			<0.000015	<0.000015
Chromium	mg/L	0.1	< 0.001	0.002		< 0.001			<0.001	<0.001
Cobalt	mg/L	0.0006	< 0.0002	0.0001		0.0003			0.0003	0.0004
Copper	mg/L	0.005	0.0003	0.0006		0.0004			0.0006	0.0007
Lead	mg/L	0.025	0.00011	0.00003		0.0002			0.00006	0.00018
Mercury	mg/L	-	< 0.00002	< 0.00002		< 0.00002			<0.00002	<0.00002
Molybdenum	mg/L	0.04	0.0003	0.0002		< 0.0001			<0.0001	0.0003
Nickel	mg/L	0.025	< 0.01	< 0.01		< 0.01			0.0009	0.0009
Selenium	mg/L	-	< 0.002	< 0.001		< 0.001			<0.001	<0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001		< 0.0001			<0.0001	<0.0001
Strontium	mg/L	-	0.35	0.255		0.316			0.224	0.32
Thallium	mg/L	-	< 0.0001	< 0.00005		< 0.00005			<0.00005	<0.00005
Vanadium	mg/L	-	< 0.0002	0.0003		0.0006			0.0002	0.0006
Zinc	mg/L	0.03	< 0.005	< 0.005		0.007			<0.005	0.016
Cyanide	mg/L	0.005		< 0.005		< 0.005			<0.005	<0.005
Turbidity	NTU	-		0.9		17.7			6.5	1.7
Tannins & Lignins	mg/L	-		0.6		1.5			1.6	1.1

PWQO - Provincial Water Quality Objectives

Bold & highlighting indicates PWQO exceedance

APPENDIX C

2024 Stormwater Management Pond Restoration As-Built Drawings

LINDSAY OPS LANDFILL SEDIMENTATION POND RESTORATION

51 Wilson Road, Lindsay, ON

AS-BUILTS

WSP Project No: 171-10835-08
Date: October 28, 2024



KEY PLAN

DRAWING INDEX

NO.	TITLE
C-101	EXISTING CONDITION AS-BUILTS JULY 16, 2024

LEGEND

DESCRIPTION	
CELL BOUNDARY / LIMIT OF WASTE	
FENCE	
CONTOUR LINE	250.5
SPOT ELEVATION	252.53
DRAINAGE DITCH	
CULVERT	
EXISTING PIPE	
OUTLET STRUCTURE	OS
GATE VALVE	GV
CATCH BASIN	CB
PRE-EXISTING RIP RAP	
NEW RIP-RIP	
CONCRETE PIPE REMOVED	
GATE VALVE REMOVED	GV

We see the future more clearly and design for it today.

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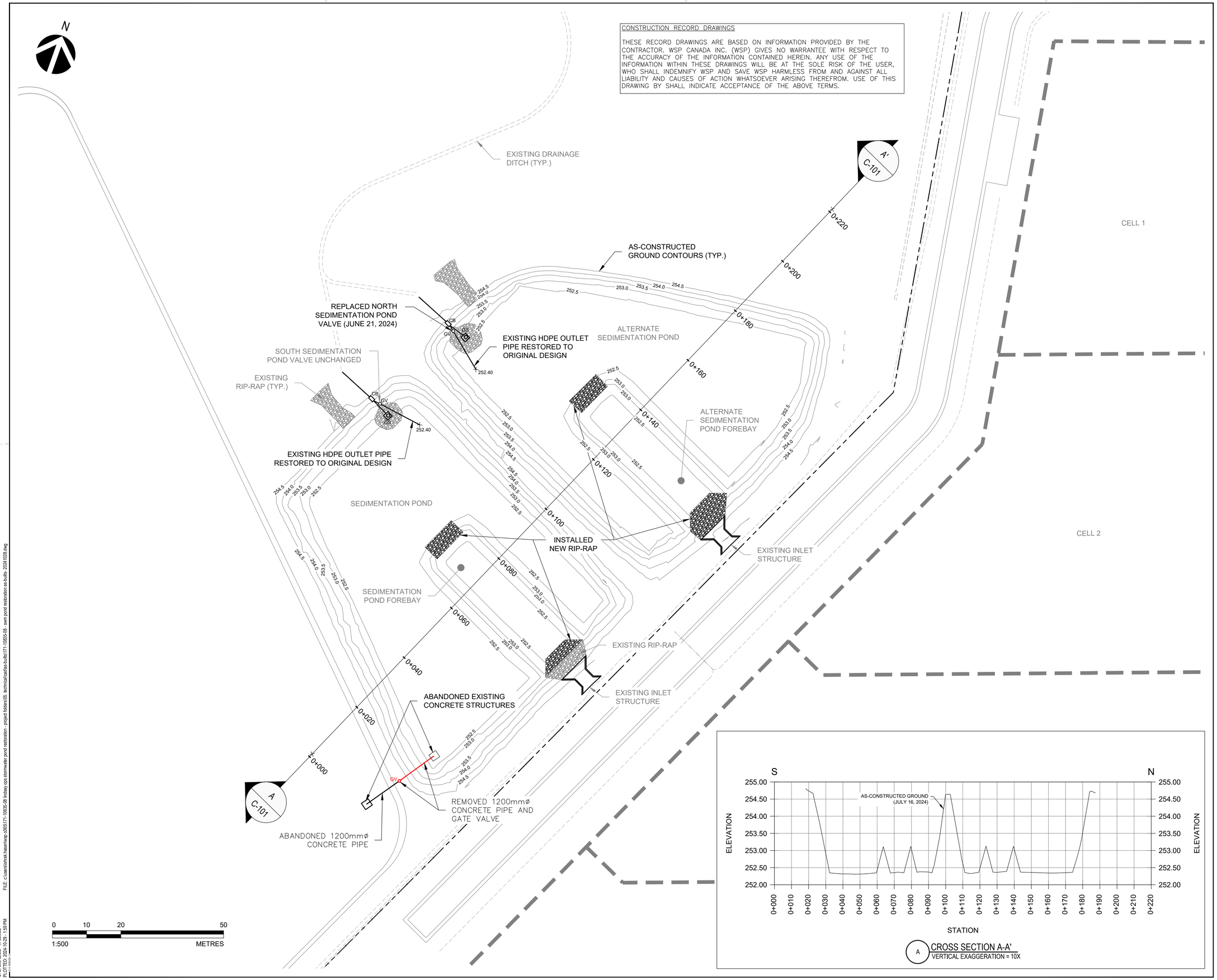

A CROSS SECTION A-A'
VERTICAL EXAGGERATION = 10X

CONSTRUCTION RECORD DRAWINGS

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SITE BENCHMARKS PROVIDED ARE AS FOLLOWS:
1. SQUARE STANDARD IRON BAR (SIB) EAST OF TRANSFER STATION SOUTH OF THE SERVICE ENTRANCE; AT N4918015.41, E680489.27, ELEVATION = 257.73
2. SQUARE STANDARD IRON BAR (SIB) SOUTH-EAST OF THE FORMER LANDFILL AREA, ON THE CORNER OF LAGOON ROAD AND WILSON ROAD; AT N4917324.90, E680732.94, ELEVATIONS = 267.10
3. CROSS-CUT NORTH OF LAGOON 1; AT N4918014.07, E680062.16, ELEVATION = 253.29M

REVISION:

REV	DATE	DESCRIPTION	BY
3	2024-10-28	AS-BUILTS	IFH
2	2023-10-31	ISSUED FOR TENDER	IFH
1	2023-08-25	ISSUED FOR CLIENT REVIEW	IFH

SEAL:

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ORIGINAL SCALE:
DESIGNED BY: I F H
ASSISTED BY:
DRAWN BY: I F H
MODIFIED BY:
APPROVED BY: --
DATE: 2024-10-28
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

DISCIPLINE: ENVIRONMENT

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PROJECT NUMBER: 171-10835-08

CLIENT: Kawartha Lakes

CLIENT REF. #: --

PROJECT:
LINDSAY OPS LANDFILL SEDIMENTATION POND RESTORATION

TITLE:
EXISTING CONDITION AS-BUILTS JULY 16, 2024

DRAWING NUMBER: C-101
REV. 2

FILE: c:\users\ishrak.hasan\wsp o365\171-10835-08 lindsay ops stormwater pond restoration - project folders\05. technical\cad\as-builts\171-10835-08 - swm pond restoration as-builts- 20241028.dwg
CTB: cws colour - ih edit.ctb
PLOTTED: 2024-10-29 - 1:59 PM

APPENDIX M

2024 Toxicity Testing Laboratory Results

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT

Daphnia magna
EPS 1/RM/14

Work Order : 254602
Sample Number : 82155

SAMPLE IDENTIFICATION

Company :	City of Kawartha Lakes	Sampling Date :	2024-04-25
Location :	Lindsay ON	Sampling Time :	11:00
Substance :	SW-13	Date Received :	2024-04-26
Sampling Method :	Grab	Time Received :	11:35
Sampled By :	B. Pettersone	Temperature at Receipt :	15 °C
Sample Description :	Clear, yellow.	Date Tested :	2024-04-26

Test Method : Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* . Environment Canada EPS 1/RM/14 (Second Edition, December 2000, with February 2016 amendments).

48-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Immobility	0.0 %
	Mean Mortality	0.0 %
100%	Mean Immobility	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Species :	*Daphnia magna*	Time to First Brood :	9.2 days
Organism Batch :	Dm24-07	Average Brood Size :	29.3
Culture Mortality :	0% (previous 7 days)		

TEST CONDITIONS

Sample Treatment :	None	Number of Replicates :	3
pH Adjustment :	None	Organisms per Replicate :	10
Pre-aeration Rate :	~30 mL/min/L	Organisms per Test Level :	30
Duration of Pre-Aeration :	30 minutes	Organism Loading Rate :	15.0 mL/organism
Test Aeration :	None	Impaired Control Organisms :	0.0%
Hardness Adjustment :	None	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Sodium Chloride		
Date Tested :	2024-04-23	LC50 :	6.1 g/L
Organism Batch :	Dm24-07	95% Confidence Limits :	5.8 - 6.3 g/L
Analyst(s) :	SV, FM	Historical Mean LC50 :	6.3 g/L
Statistical Method :	Spearman-Kärber	Warning Limits (± 2SD) :	5.9 - 6.8 g/L

COMMENTS

- All test validity criteria as specified in the test method were satisfied.

Approved By : _____
Project Manager

Work Order : 254602
Sample Number : 82155

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)*	Hardness (as $CaCO_3$)
Initial Chemistry (100%) :	7.4	9.4	1482	21	108	370 mg/L

0 HOURS

Date & Time : 2024-04-16 14:30
Analyst(s) : AA (JGR)/JGR

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation*	Hardness
100	A	0	0	7.6	8.9	1477	21	104	370
100	B	0	0	7.6	8.9	1477	21	104	370
100	C	0	0	7.6	8.9	1477	21	104	370
Control	A	0	0	8.3	8.8	463	20	100	160
Control	B	0	0	8.3	8.8	463	20	100	160
Control	C	0	0	8.3	8.8	463	20	100	160

Notes:

24 HOURS

Date & Time : 2024-04-17 13:50
Analyst(s) : JGR

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	–	0	–	–	–	20
100	B	–	0	–	–	–	20
100	C	–	0	–	–	–	20
Control	A	–	0	–	–	–	20
Control	B	–	0	–	–	–	20
Control	C	–	0	–	–	–	20

Notes:

48 HOURS

Date & Time : 2024-04-18 14:05
Analyst(s) : FM

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	0	0	8.3	8.3	1472	21
100	B	0	0	8.3	8.3	1468	21
100	C	0	0	8.3	8.3	1458	21
Control	A	0	0	8.4	8.4	476	21
Control	B	0	0	8.4	8.4	481	21
Control	C	0	0	8.4	8.4	479	21

Notes:

Number immobile does not include number dead.

"–" = not measured/not required
* adjusted for temperature and barometric pressure

Test Data Reviewed By : EM
Date : 2024-04-30

NAUTILUS ENVIRONMENTAL
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Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT
Rainbow Trout
EPS 1/RM/13

Work Order : 254602
Sample Number : 82155

SAMPLE IDENTIFICATION

Company :	City of Kawartha Lakes	Sampling Date :	2024-04-25
Location :	Lindsay ON	Sampling Time :	11:00
Substance :	SW-13	Date Received :	2024-04-26
Sampling Method :	Grab	Time Received :	11:35
Sampled By :	B. Pettersone	Temperature at Receipt :	15 °C
Sample Description :	Clear, yellow.	Date Tested :	2024-04-26

Test Method(s) : Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout. Environment Canada, EPS 1/RM/13 (2nd Edition, December 2000, with May 2007, February 2016, and December 2023 amendments).

96-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Impairment	0.0 %
	Mean Mortality	0.0 %
100%	Mean Impairment	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Test Organism :	*Oncorhynchus mykiss*	Mean Fork Length :	42.4 mm
Organism Batch :	T24-05	Range of Fork Lengths :	39 - 44 mm
Control Sample Size :	10	Mean Wet Weight :	0.7 g
Cumulative stock mortality rate :	0% (previous 7 days)	Organism Loading Rate :	0.3 g/L
Control organisms showing stress :	0 (at test completion)		

TEST CONDITIONS

Test Type :	Single concentration	Number of Replicates :	1
Sample pH Adjustment :	None	Organisms Per Replicate :	10
Sample Pre-aeration/Aeration Rate :	6.5 ± 1 mL/min/L	Organisms Per Test Level :	10
Duration of Sample Pre-Aeration :	30 minutes	Volume of Sample :	20 L
Control Pre-aeration/Aeration Rate :	6.5 ± 1 mL/L/min	Volume of Control :	20 L
Duration of Control Pre-aeration:	30 minutes	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Potassium Chloride		
Organism Batch :	T24-05	LC50 :	4476 mg/L
Date Tested :	2024-04-05	95% Confidence Limits :	4070 - 4903 mg/L
Analyst(s) :	NP, JGR, SV, PC	Historical Mean LC50 :	4180 mg/L
Statistical Method :	Linear Regression (MLE)	Warning Limits (± 2SD) :	3135 - 5573 mg/L

COMMENTS

•All test validity criteria as specified in the test method were satisfied.

Approved By : _____
Project Manager

Work Order : 254602
Sample Number : 82155

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)[3]
Initial Water Chemistry (100%) :	7.5	9.8	1545	15	101
After 30 min pre-aeration :	7.5	9.3	1529	15	97

0 HOURS

Date & Time 2024-04-26 12:40
Analyst(s) : FM (AJS)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation[3]
100%	0	0	7.5	9.3	1529	15	97
Control	0	0	8.4	9.8	734	14	98

Notes:

24 HOURS

Date & Time 2024-04-27 11:45
Analyst(s) : FM (JGR)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

48 HOURS

Date & Time 2024-04-28 11:35
Analyst(s) : FM (JGR)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

72 HOURS

Date & Time 2024-04-29 12:45
Analyst(s) : AJS

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

96 HOURS

Date & Time 2024-04-30 13:30
Analyst(s) : AJS

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	8.2	8.5	1502	15
Control	0	0	8.3	9.3	699	15

Notes:

"–" = not measured/not required
Number impaired does not include number dead.
[3] adjusted for temperature and barometric pressure

Test Data Reviewed By : JL
Date : 2024-05-01

NAUTILUS ENVIRONMENTAL
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Fax. (519) 763-4419

TOXICITY TEST REPORT

Daphnia magna
EPS 1/RM/14

Work Order : 255030
Sample Number : 82752

SAMPLE IDENTIFICATION

Company :	City of Kawartha Lakes	Sampling Date :	2024-06-11
Location :	Lindsay ON	Sampling Time :	16:00
Substance :	SW-13	Date Received :	2024-06-13
Sampling Method :	Grab	Time Received :	12:40
Sampled By :	B. Pettersone	Temperature at Receipt :	20 °C
Sample Description :	Clear, green.	Date Tested :	2024-06-13

Test Method : Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* . Environment Canada EPS 1/RM/14 (Second Edition, December 2000, with February 2016 amendments).

48-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Immobility	0.0 %
	Mean Mortality	0.0 %
100%	Mean Immobility	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Species :	*Daphnia magna*	Time to First Brood :	7.8 days
Organism Batch :	Dm24-10	Average Brood Size :	33.1
Culture Mortality :	2.3% (previous 7 days)		

TEST CONDITIONS

Sample Treatment :	None	Number of Replicates :	3
pH Adjustment :	None	Organisms per Replicate :	10
Pre-aeration Rate :	~30 mL/min/L	Organisms per Test Level :	30
Duration of Pre-Aeration :	30 minutes	Organism Loading Rate :	15.0 mL/organism
Test Aeration :	None	Impaired Control Organisms :	0.0%
Hardness Adjustment :	None	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Sodium Chloride		
Date Tested :	2024-06-04	LC50 :	6.3 g/L
Organism Batch :	Dm24-10	95% Confidence Limits :	5.8 - 6.8 g/L
Analyst(s) :	JN, AA	Historical Mean LC50 :	6.4 g/L
Statistical Method :	Binomial	Warning Limits (± 2SD) :	5.9 - 6.8 g/L

COMMENTS

- All test validity criteria as specified in the test method were satisfied.

Approved By : _____
Project Manager

Work Order : 255030
Sample Number : 82752

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)*	Hardness (as $CaCO_3$)
Initial Chemistry (100%) :	8.1	10.4	1207	20	122	270 mg/L

0 HOURS

Date & Time : 2024-06-13 14:45
Analyst(s) : GR (SV)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation*	Hardness
100	A	0	0	8.2	8.7	1199	21	103	270
100	B	0	0	8.2	8.7	1199	21	103	270
100	C	0	0	8.2	8.7	1199	21	103	270
Control	A	0	0	8.4	8.5	448	21	100	140
Control	B	0	0	8.4	8.5	448	21	100	140
Control	C	0	0	8.4	8.5	448	21	100	140

Notes:

24 HOURS

Date & Time : 2024-06-14 14:15
Analyst(s) : GR (JGR)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	–	0	–	–	–	21
100	B	–	0	–	–	–	21
100	C	–	0	–	–	–	21
Control	A	–	0	–	–	–	21
Control	B	–	0	–	–	–	21
Control	C	–	0	–	–	–	21

Notes:

48 HOURS

Date & Time : 2024-06-15 14:20
Analyst(s) : JN (AJS)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	0	0	8.5	8.3	1205	20
100	B	0	0	8.4	8.4	1198	20
100	C	0	0	8.4	8.4	1190	20
Control	A	0	0	8.3	8.4	450	20
Control	B	0	0	8.3	8.4	448	20
Control	C	0	0	8.3	8.4	449	20

Notes:

Number immobile does not include number dead.

"–" = not measured/not required
* adjusted for temperature and barometric pressure

Test Data Reviewed By : JJ
Date : 2024-06-19

NAUTILUS ENVIRONMENTAL
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Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT
Rainbow Trout
EPS 1/RM/13

Work Order : 255030
Sample Number : 82752

SAMPLE IDENTIFICATION

Company :	City of Kawartha Lakes	Sampling Date :	2024-06-11
Location :	Lindsay ON	Sampling Time :	16:00
Substance :	SW-13	Date Received :	2024-06-13
Sampling Method :	Grab	Time Received :	12:40
Sampled By :	B. Pettersone	Temperature at Receipt :	20 °C
Sample Description :	Clear, green.	Date Tested :	2024-06-13

Test Method(s) : Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout. Environment Canada, EPS 1/RM/13 (2nd Edition, December 2000, with May 2007, February 2016, and December 2023 amendments).

96-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Impairment	0.0 %
	Mean Mortality	0.0 %
100%	Mean Impairment	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Test Organism :	*Oncorhynchus mykiss*	Mean Fork Length :	41.8 mm
Organism Batch :	T24-09	Range of Fork Lengths :	36 - 51 mm
Control Sample Size :	10	Mean Wet Weight :	0.7 g
Cumulative stock mortality rate :	0% (previous 7 days)	Organism Loading Rate :	0.4 g/L
Control organisms showing stress :	0 (at test completion)		

TEST CONDITIONS

Test Type :	Single concentration	Number of Replicates :	1
Sample pH Adjustment :	None	Organisms Per Replicate :	10
Sample Pre-aeration/Aeration Rate :	6.5 ± 1 mL/min/L	Organisms Per Test Level :	10
Duration of Sample Pre-Aeration :	120 minutes	Volume of Sample :	18 L
Control Pre-aeration/Aeration Rate :	6.5 ± 1 mL/L/min	Volume of Control :	18 L
Duration of Control Pre-aeration:	30 minutes	Test Method Deviation(s) :	Yes (see 'COMMENTS')

REFERENCE TOXICANT DATA

Toxicant :	Potassium Chloride		
Organism Batch :	T24-09	LC50 :	3560 mg/L
Date Tested :	2024-06-03	95% Confidence Limits :	3263 - 3884 mg/L
Analyst(s) :	NP, FM, AJS, DT, JW	Historical Mean LC50 :	4324 mg/L
Statistical Method :	Spearman-Kärber	Warning Limits (± 2SD) :	3506 - 5332 mg/L

COMMENTS

•All test validity criteria as specified in the test method were satisfied.

Noted Deviation: Due to equipment failure, continuous aeration was interrupted between the 48-hour and 72-hour observation periods. All test validity criteria was met, and the test is considered valid.

Approved By : _____

Project Manager

Work Order : 255030
Sample Number : 82752

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)[3]
Initial Water Chemistry (100%) :	8.2	10.5	1248	14	108
After 30 min pre-aeration :	8.2	10.2	1239	14	106

0 HOURS

Date & Time 2024-06-13 15:35
Analyst(s) : FM (AJS)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation[3]
100%	0	0	8.2	10.0	1243	14	103
Control	0	0	8.4	9.4	717	15	100

Notes:

24 HOURS

Date & Time 2024-06-14 13:35
Analyst(s) : DT

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

48 HOURS

Date & Time 2024-06-15 13:45
Analyst(s) : DT

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

72 HOURS

Date & Time 2024-06-16 13:45
Analyst(s) : DT

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

96 HOURS

Date & Time 2024-06-17 14:35
Analyst(s) : FM (DT)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	8.0	8.4	1222	15
Control	0	0	8.3	9.2	679	15

Notes:

"–" = not measured/not required
Number impaired does not include number dead.
[3] adjusted for temperature and barometric pressure

Test Data Reviewed By : EM
Date : 2024-06-18

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TOXICITY TEST REPORT

Daphnia magna
EPS 1/RM/14

Work Order : 255612
Sample Number : 83617

SAMPLE IDENTIFICATION

Company :	City of Kawartha Lakes	Sampling Date :	2024-08-15
Location :	Lindsay ON	Sampling Time :	16:00
Substance :	SW-13	Date Received :	2024-08-16
Sampling Method :	Grab	Time Received :	14:50
Sampled By :	B. Pettersone	Temperature at Receipt :	27 °C
Sample Description :	Clear, green	Date Tested :	2024-08-17

Test Method : Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* . Environment Canada EPS 1/RM/14 (Second Edition, December 2000, with February 2016 amendments).

48-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Immobility	0.0 %
	Mean Mortality	0.0 %
100%	Mean Immobility	0.0 %
	Mean Mortality	3.3 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Species :	*Daphnia magna*	Time to First Brood :	7.3 days
Organism Batch :	Dm24-15	Average Brood Size :	32.4
Culture Mortality :	2.0% (previous 7 days)		

TEST CONDITIONS

Sample Treatment :	None	Number of Replicates :	3
pH Adjustment :	None	Organisms per Replicate :	10
Pre-aeration Rate :	~30 mL/min/L	Organisms per Test Level :	30
Duration of Pre-Aeration :	0 minutes	Organism Loading Rate :	15.0 mL/organism
Test Aeration :	None	Impaired Control Organisms :	0.0%
Hardness Adjustment :	None	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Sodium Chloride		
Date Tested :	2024-08-13	LC50 :	6.5 g/L
Organism Batch :	Dm24-15	95% Confidence Limits :	6.0 - 7.0 g/L
Analyst(s) :	AA, GR	Historical Mean LC50 :	6.3 g/L
Statistical Method :	Linear Regression (MLE)	Warning Limits (± 2SD) :	5.9 - 6.8 g/L

COMMENTS

- All test validity criteria as specified in the test method were satisfied.

Approved By : _____
Project Manager

Work Order : 255612
Sample Number : 83617

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)*	Hardness (as $CaCO_3$)
Initial Chemistry (100%) :	7.7	7.1	982	21	85	280 mg/L

0 HOURS

Date & Time : 2024-08-17 13:55
Analyst(s) : AA (FM)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation*	Hardness
100	A	0	0	7.7	7.1	982	21	85	280
100	B	0	0	7.7	7.1	982	21	85	280
100	C	0	0	7.7	7.1	982	21	85	280
Control	A	0	0	8.2	8.5	466	20	100	150
Control	B	0	0	8.2	8.5	466	20	100	150
Control	C	0	0	8.2	8.5	466	20	100	150

Notes:

24 HOURS

Date & Time : 2024-08-18 13:55
Analyst(s) : GR (FM)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	–	0	–	–	–	20
100	B	–	0	–	–	–	20
100	C	–	1	–	–	–	20
Control	A	–	0	–	–	–	20
Control	B	–	0	–	–	–	20
Control	C	–	0	–	–	–	20

Notes:

48 HOURS

Date & Time : 2024-08-19 13:50
Analyst(s) : AA (KP)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	0	0	8.4	8.2	979	20
100	B	0	0	8.4	8.2	977	20
100	C	1	0	8.4	8.3	981	20
Control	A	0	0	8.3	8.4	469	20
Control	B	0	0	8.3	8.3	471	20
Control	C	0	0	8.3	8.4	474	20

Notes:

Number immobile does not include number dead.

"–" = not measured/not required
* adjusted for temperature and barometric pressure

Test Data Reviewed By : EM
Date : 2024-08-22

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT

Rainbow Trout
EPS 1/RM/13

Work Order : 255612
Sample Number : 83617

SAMPLE IDENTIFICATION

Company :	City of Kawartha Lakes	Sampling Date :	2024-08-15
Location :	Lindsay ON	Sampling Time :	16:00
Substance :	SW-13	Date Received :	2024-08-16
Sampling Method :	Grab	Time Received :	14:50
Sampled By :	B. Pettersone	Temperature at Receipt :	27 °C
Sample Description :	Clear, green	Date Tested :	2024-08-17

Test Method(s) : Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout. Environment Canada, EPS 1/RM/13 (2nd Edition, December 2000, with May 2007, February 2016, and December 2023 amendments).

96-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Impairment	0.0 %
	Mean Mortality	10.0 %
100%	Mean Impairment	0.0 %
	Mean Mortality	20.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Test Organism :	*Oncorhynchus mykiss*	Mean Fork Length :	38.7 mm
Organism Batch :	T24-16	Range of Fork Lengths :	34 - 45 mm
Control Sample Size :	9*	Mean Wet Weight :	0.5 g
Cumulative stock mortality rate :	0% (previous 7 days)	Organism Loading Rate :	0.2 g/L
Control organisms showing stress :	1 (at test completion)		

*One test organism dead in the Control group; see page 2.

TEST CONDITIONS

Test Type :	Single concentration	Number of Replicates :	1
Sample pH Adjustment :	None	Organisms Per Replicate :	10
Sample Pre-aeration/Aeration Rate :	6.5 ± 1 mL/min/L	Organisms Per Test Level :	10
Duration of Sample Pre-Aeration :	30 minutes	Volume of Sample :	22 L
Control Pre-aeration/Aeration Rate :	6.5 ± 1 mL/min/L	Volume of Control :	22 L
Duration of Control Pre-aeration:	30 minutes	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Potassium Chloride		
Organism Batch :	T24-16	LC50 :	4007 mg/L
Date Tested :	2024-08-01	95% Confidence Limits :	2895 - 4593 mg/L
Analyst(s) :	DT, JCS	Historical Mean LC50 :	4195 mg/L
Statistical Method :	Linear Regression (MLE)	Warning Limits (± 2SD) :	3300 - 5331 mg/L

COMMENTS

•All test validity criteria as specified in the test method were satisfied.

Approved By : _____
Project Manager

Work Order : 255612
Sample Number : 83617

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)[3]
Initial Water Chemistry (100%) :	7.6	7.9	1024	15	82
After 30 min pre-aeration :	7.7	8.4	1025	16	91

0 HOURS

Date & Time 2024-08-17 11:30
Analyst(s) : FM (JGR)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation[3]
100%	0	0	7.7	8.4	1025	16	91
Control	0	0	8.2	9.4	729	15	97

Notes:

24 HOURS

Date & Time 2024-08-18 11:20
Analyst(s) : FM (JGR)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

48 HOURS

Date & Time 2024-08-19 10:45
Analyst(s) : DT

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

72 HOURS

Date & Time 2024-08-20 10:40
Analyst(s) : GR (DT)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	14
Control	0	0	–	–	–	14

Notes:

96 HOURS

Date & Time 2024-08-21 11:00
Analyst(s) : DT

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	2	0	8.3	9.7	1023	15
Control	1	0	8.3	9.2	689	15

Notes:

"–" = not measured/not required
Number impaired does not include number dead.
[3] adjusted for temperature and barometric pressure

Test Data Reviewed By : JL
Date : 2024-08-21

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT

Daphnia magna
EPS 1/RM/14

Work Order : 256130
Sample Number : 84437

SAMPLE IDENTIFICATION

Company :	City of Kawartha Lakes	Sampling Date :	2024-10-10
Location :	Lindsay ON	Sampling Time :	16:00
Substance :	SW-13	Date Received :	2024-10-11
Sampling Method :	Grab	Time Received :	13:10
Sampled By :	B. Pettersone	Temperature at Receipt :	18 °C
Sample Description :	Green, clear	Date Tested :	2024-10-13

Test Method : Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* . Environment Canada EPS 1/RM/14 (Second Edition, December 2000, with February 2016 amendments).

48-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Immobility	0.0 %
	Mean Mortality	0.0 %
100%	Mean Immobility	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Species :	*Daphnia magna*	Time to First Brood :	7.2 days
Organism Batch :	Dm24-19	Average Brood Size :	32.2
Culture Mortality :	5.0% (previous 7 days)		

TEST CONDITIONS

Sample Treatment :	None	Number of Replicates :	3
pH Adjustment :	None	Organisms per Replicate :	10
Pre-aeration Rate :	~30 mL/min/L	Organisms per Test Level :	30
Duration of Pre-Aeration :	30 minutes	Organism Loading Rate :	15.0 mL/organism
Test Aeration :	None	Impaired Control Organisms :	0.0%
Hardness Adjustment :	None	Test Method Deviation(s) :	Yes (see 'COMMENTS')

REFERENCE TOXICANT DATA

Toxicant :	Sodium Chloride		
Date Tested :	2024-10-11	LC50 :	6.3 g/L
Organism Batch :	Dm24-19	95% Confidence Limits :	5.8 - 6.8 g/L
Analyst(s) :	JGR, NM, SSF	Historical Mean LC50 :	6.3 g/L
Statistical Method :	Binomial	Warning Limits (± 2SD) :	5.8 - 7.0 g/L

COMMENTS

•All test validity criteria as specified in the test method were satisfied.

Noted Deviation(s) : The temperature of the *Daphnia magna* testing laboratory increased to 25°C for an unknown length of time between 2024-10-13 and 2024-10-14.

Approved By : _____
Project Manager

Work Order : 256130
Sample Number : 84437

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)*	Hardness (as $CaCO_3$)
Initial Chemistry (100%) :	8.2	10.6	1267	21	122	280 mg/L

0 HOURS

Date & Time : 2024-10-13 9:50
Analyst(s) : NM/SSF

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation*	Hardness
100	A	0	0	8.3	8.9	1265	21	103	280
100	B	0	0	8.3	8.9	1265	21	103	280
100	C	0	0	8.3	8.9	1265	21	103	280
Control	A	0	0	8.3	8.6	540	21	100	150
Control	B	0	0	8.3	8.6	540	21	100	150
Control	C	0	0	8.3	8.6	540	21	100	150

Notes:

24 HOURS

Date & Time : 2024-10-14 10:05
Analyst(s) : SSF

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	–	0	–	–	–	22
100	B	–	0	–	–	–	22
100	C	–	0	–	–	–	22
Control	A	–	0	–	–	–	22
Control	B	–	0	–	–	–	22
Control	C	–	0	–	–	–	22

Notes:

48 HOURS

Date & Time : 2024-10-15 9:25
Analyst(s) : MK/GR (CGR)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	0	0	8.5	8.6	1284	20
100	B	0	0	8.5	8.5	1286	20
100	C	0	0	8.4	8.4	1285	20
Control	A	0	0	8.3	8.5	555	20
Control	B	0	0	8.3	8.6	556	20
Control	C	0	0	8.3	8.5	557	20

Notes:

Number immobile does not include number dead.

"–" = not measured/not required
* adjusted for temperature and barometric pressure

Test Data Reviewed By : JJ
Date : 2024-10-18

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TOXICITY TEST REPORT
Rainbow Trout
EPS 1/RM/13

Work Order : 256130
Sample Number : 84437

SAMPLE IDENTIFICATION

Company :	City of Kawartha Lakes	Sampling Date :	2024-10-10
Location :	Lindsay ON	Sampling Time :	16:00
Substance :	SW-13	Date Received :	2024-10-11
Sampling Method :	Grab	Time Received :	13:10
Sampled By :	B. Pettersone	Temperature at Receipt :	18 °C
Sample Description :	Green, clear	Date Tested :	2024-10-12

Test Method(s) : Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout. Environment Canada, EPS 1/RM/13 (2nd Edition, December 2000, with May 2007, February 2016, and December 2023 amendments).

96-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Impairment	0.0 %
	Mean Mortality	0.0 %
100%	Mean Impairment	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Test Organism :	*Oncorhynchus mykiss*	Mean Fork Length :	38.5 mm
Organism Batch :	T24-21	Range of Fork Lengths :	35 - 42 mm
Control Sample Size :	10	Mean Wet Weight :	0.6 g
Cumulative stock mortality rate :	0% (previous 7 days)	Organism Loading Rate :	0.3 g/L
Control organisms showing stress :	0 (at test completion)		

TEST CONDITIONS

Test Type :	Single concentration	Number of Replicates :	1
Sample pH Adjustment :	None	Organisms Per Replicate :	10
Sample Pre-aeration/Aeration Rate :	6.5 ± 1 mL/min/L	Organisms Per Test Level :	10
Duration of Sample Pre-Aeration :	120 minutes	Volume of Sample :	18 L
Control Pre-aeration/Aeration Rate :	6.5 ± 1 mL/min/L	Volume of Control :	18 L
Duration of Control Pre-aeration:	30 minutes	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Potassium Chloride		
Organism Batch :	T24-21	LC50 :	3392 mg/L
Date Tested :	2024-10-05	95% Confidence Limits :	3054 - 3749 mg/L
Analyst(s) :	GR, NWP, AJS	Historical Mean LC50 :	3556 mg/L
Statistical Method :	Linear Regression (MLE)	Warning Limits (± 2SD) :	2558 - 4944 mg/L

COMMENTS

•All test validity criteria as specified in the test method were satisfied.

Approved By : _____
Project Manager

Work Order : 256130
Sample Number : 84437

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)[3]
Initial Water Chemistry (100%) :	7.8	11.3	1175	15	119
After 30 min pre-aeration :	7.7	10.5	1189	15	112

0 HOURS

Date & Time 2024-10-12 11:50
Analyst(s) : NWP

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation[3]
100%	0	0	7.8	10.1	1189	15	107
Control	0	0	8.0	9.8	727	15	100

Notes:

24 HOURS

Date & Time 2024-10-13 10:05
Analyst(s) : NWP

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

48 HOURS

Date & Time 2024-10-14 9:55
Analyst(s) : NM

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

72 HOURS

Date & Time 2024-10-15 11:15
Analyst(s) : JGR

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

96 HOURS

Date & Time 2024-10-16 12:00
Analyst(s) : GR (JGR)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	7.9	8.8	1180	15
Control	0	0	8.0	9.3	689	15

Notes:

"–" = not measured/not required

Number impaired does not include number dead.

[3] adjusted for temperature and barometric pressure

Test Data Reviewed By : JJ

Date : 2024-10-17

APPENDIX N

2024 Leachate Collection System Video Inspection Report

Nieltech Services Ltd.
75 Moorefield Street, Unit #1 Cambridge, ON
Phone: 519-748-0311
Fax: 519-740-4242

NIELTECH SERVICES LTD.

2023-24-OQ

Flushing and Video Inspection of Leachate Collection Systems

City of Kawartha Lakes

YEAR 2 (2024): LINDSAY OPS LANDFILL

Date: September 6, 2024

Nieltech Services Ltd.
75 Moorefield Street, Unit # 1
Cambridge, ON N1T 1S2

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Nieltech Services Ltd.
75 Moorefield Street, Unit # 1
Cambridge, ON N1T 1S2

1.0 GENERAL INTRODUCTION

Nieltech Services Limited (NTS) was retained by the City of Kawartha Lakes for the Flushing and Video Inspection of Leachate Collection Systems for the City Contract No. 2023-24-OQ. After successfully completing the first two years or the contract in 2023, Nieltech was requested to proceed with the fourth year of the contract in 2024. This report is based on the inspections conducted at Lindsay OPS Landfill completed by NTS in the year 2024. The purpose of the inspections was to identify and report any structural and operational defects in sewers and manholes at the landfill. NTS utilized a combination of a flusher truck and a CCTV truck in order to accomplish this task.

2.0 SUMMARY OF FINDINGS

NTS video inspected over 5000 meters of pipes at the Lindsay OPS Landfill. The overall structural condition of the pipes was adequate. There were not any collapsed pipes or pipes that looked structurally unsound. There were also no obvious blockages that were observed. This report should be read in conjunction with the CCTV report as well as CCTV videos provided to the City. NTS has provided a summary of our observations in Table 1 below along with our recommendations.

Nieltech Services Ltd.
75 Moorefield Street, Unit # 1
Cambridge, ON N1T 1S2

3.0 TABLE 1: INTERPRETATION OF VIDEOS AND RECOMMENDATIONS

Pipe ID	**INTERPRETATION OF VIDEOS**	**RECOMMENDATIONS**
MHL1 - MHL2 (L1)	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MHL1 - MHL2 (L2)	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MHL1 - MHL2 (L3)	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MHL3 - MHL4 (L4)	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MHL3 - MHL4 (L5)	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MHL3 - MHL4 (L6)	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MHL5 - MHL6 (L7)	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MHL5 - MHL6 (L8)	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MHL7 - MHL8 (L9)	No issues observed	none
MHL7 - MHL8 (L10)	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MHL9 - MHL10 (L11)	No issues observed	none
MHL9 - MHL10 (L12)	No issues observed	none
MHL9 - PLUG (L13)	could not complete inspection due to studs built into pipe for the section we could video there were no issues	none
MHL10 - PLUG (L14)	No issues observed	none
MHL7 - MHL9 (H10)	No issues observed	none
MHL7 - MHL9 (H11)	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection

Nieltech Services Ltd.
75 Moorefield Street, Unit # 1
Cambridge, ON N1T 1S2

MHL5 - MHL7 (H8)	Sags potentially holding water at various locations were noted, flow occurring Due to size of pipe no reversal inspection available. Flushing still occurred.	Monitor sags with annual inspection accumulation of debris around sags
MHL5 - MHL7 (H9)	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MHL3 - MHL5 (H6)	CCTV not available, No Access	N/A
MHL3 - MHL5 (H7)	CCTV not available, No Access	N/A
MHL1 - MHL3 (H4H2)	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MHL1 - MHL3 (H3H5)	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MHL1 - PUMP STA.	CCTV not available, No Access	N/A
MH1-MH2	Could not video – no access	N/A
MH2-MH3	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MH3 - MH4	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MH4 - MH5	Sags potentially holding water at various locations were noted, flow occurring	Monitor sags with annual inspection
MH5 - MH6	No issues observed	None
MH7 - MH6	No issues observed	None
MH8 - MH7	No issues observed	None
MH9 - MH8	No issues observed	None
MH10 - MH9	Possible abandoned lateral / lead	N/A
MH11 - MH10	No issues observed	None
MH11 - STUB	No issues observed	none
MH12 - MH11	No issues observed	none
MH12 - STUB	No issues observed	none
MH13 - MH12	No issues observed	none
MH14 - MH13	No issues observed	none

MH5 - PUMP STA.	CCTV not available, No Access	none
MH11 - Catchbasin	CCTV not available, No connection	monitor water level with annual inspection

3.0 CONCLUSIONS

NTS was able to successfully complete the 2024 mobilization to flush and video inspect the leachate collection system within the Lindsay OPS Landfill. The systems were draining effectively with no indication of damage or repairs required at this time. Our recommendation is to continue annual flushing, monitoring and inspections.

APPENDIX O

2024 Performance Report for the Lindsay WPCP

Lindsay Wastewater System

2024 Annual Wastewater Performance Report

Wastewater System Works Number: 110000383

Wastewater System Operating Authorities: City of Kawartha Lakes and Ontario Clean Water Agency

Reporting Period: January 1st – December 31st, 2024

OCWA

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

Annual Wastewater Performance Report
City of Kawartha Lakes

Kawartha Lakes
Jump In

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2024 Annual Wastewater System Performance Report

Executive Summary

The Lindsay Water Pollution Control Plant (WPCP) is an extended aeration sewage treatment plant with a rated capacity of 24,500 m^3/day, located at 48 Lagoon Rd in Lindsay. The facility is owned by the City of Kawartha Lakes with the treatment system and sewage pumping stations operated by Ontario Clean Water Agency and the remaining collection system operated by City staff. The treatment system is operated in accordance with Environmental Compliance Approval (ECA) #1696-BPLL4R issued June 29, 2020 and the collection system is operated in accordance with the Consolidated Linear Infrastructure Environmental Compliance Approval #141-W601 issued June 20, 2023. The wastewater system is classified as a Class III Wastewater Treatment and Class III Wastewater Collection subsystems under O. Reg. 129/04.

The Lindsay WPCP extended aeration treatment process is preceded by mechanical bar screening, compaction/dewatering of screenings, grit removal and grit dewatering facilities and is followed by aeration, secondary clarification, tertiary treatment, and disinfection using a UV system.

The extended aeration process is an aerobic, suspended growth, biological treatment process. The preliminary treatment removes some floating and settling materials, and then enters the aeration tanks where previously developed floc particles are brought into contact with the organic matter of the wastewater. After the mixed liquor is discharged from the aeration tanks, the secondary clarifiers separate the suspended solids from the treated wastewater. Settled solids in the clarifiers are recycled back to the aeration tanks. Effluent from the secondary clarifiers receives tertiary treatment whereby phosphorus is further removed by chemical precipitation ballasted by sand within the Actiflo system. The effluent is disinfected using the UV system before it is discharged into the Scugog River. Sludge generated through the process is directed to three sludge lagoons onsite where it is stored until removed.

The Lindsay wastewater collection system consists of a series of gravity sewers, nine pumping stations and associated forcemains directing raw sewage to the wastewater treatment plant.

The City of Kawartha Lakes and Ontario Clean Water Agency prepares a report summarizing system operation and performance for every municipal wastewater system annually. This report has been prepared to satisfy the reporting requirements within Environmental Compliance Approval (ECA) #1969-BPLL4R and Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) #141-W601. Unless otherwise noted within this report, the Lindsay Sewage Works complies with all requirements of the regulating authorities and the approvals it operates under.

The annual reports will be available to residents at the City of Kawartha Lakes Public Works Administration Office by appointment and the City's website. Notification that the reports are available free of charge will be made on the City of Kawartha Lakes website. The City of Kawartha Lakes Public Works Administration Office is located at 322 Kent Street West in Lindsay, Ontario.

Reporting Requirements – Wastewater Treatment Plant

In accordance with ECA #1696-BPLL4R, Section 11(4) – REPORTING, the owner shall prepare a performance report on a calendar basis and submit to the Ministry of Environment, Conservation and Parks by March 31 of the calendar year following the period being reported upon.

Section 11(4) – REPORTING

The performance report is required to contain the following:

a) a summary and interpretation of all Influent and Important Sewage monitoring data, and a review of the historical trend of the sewage characteristics and flow rates;
b) a summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates, loading and comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works;
c) a summary of all operating issues encountered and corrective actions taken;
d) a summary of all normal and emergency repairs and maintenance activities carried out on any major structure, equipment, apparatus or mechanism forming part of the Works;
e) a summary of any effluent quality assurance or control measures undertaken;
f) a summary of the calibration and maintenance carried out on all Influent, Imported Sewage and Final Effluent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer;
g) a summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active actions if any are required under the following situations:
    i. when any of the design objectives is not achieved more than 50% of the time in a year, or there is an increasing trend in deterioration of Final Effluent quality;
    ii. when the Annual Average Daily Influent Flow reaches 80% of the Rated Capacity;
h) a tabulation of the volume of sludge generated, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed; a tabulation of the measured volume of sludge accumulated in the lagoon cells in five year intervals and the estimated volume in the interim years and when sludge was disposed of during the reporting period, a summary of disposal locations and volumes of sludge disposed at each location;
i) a summary of any complaints received and any steps taken to address the complaints;
j) a summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and Spills within the meaning of Part X of EPA and abnormal discharge events;

k) a summary of all Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Page 20 – NUMBER 1969-BPLL4R Condition 10, including a report on status of implementation of all modification.
l) a summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted;
m) any changes or updates to the schedule for the completion of construction and commissioning operation of major process(es)/equipment groups in the Proposed Works;
n) a summary of any deviation from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year.

The following is a report from the records maintained by the Ontario Clean Water Agency for the Lindsay Wastewater Treatment Plant for the calendar year 2024:

Summary of Influent and Imported Sewage Monitoring Data to Limits and Objectives

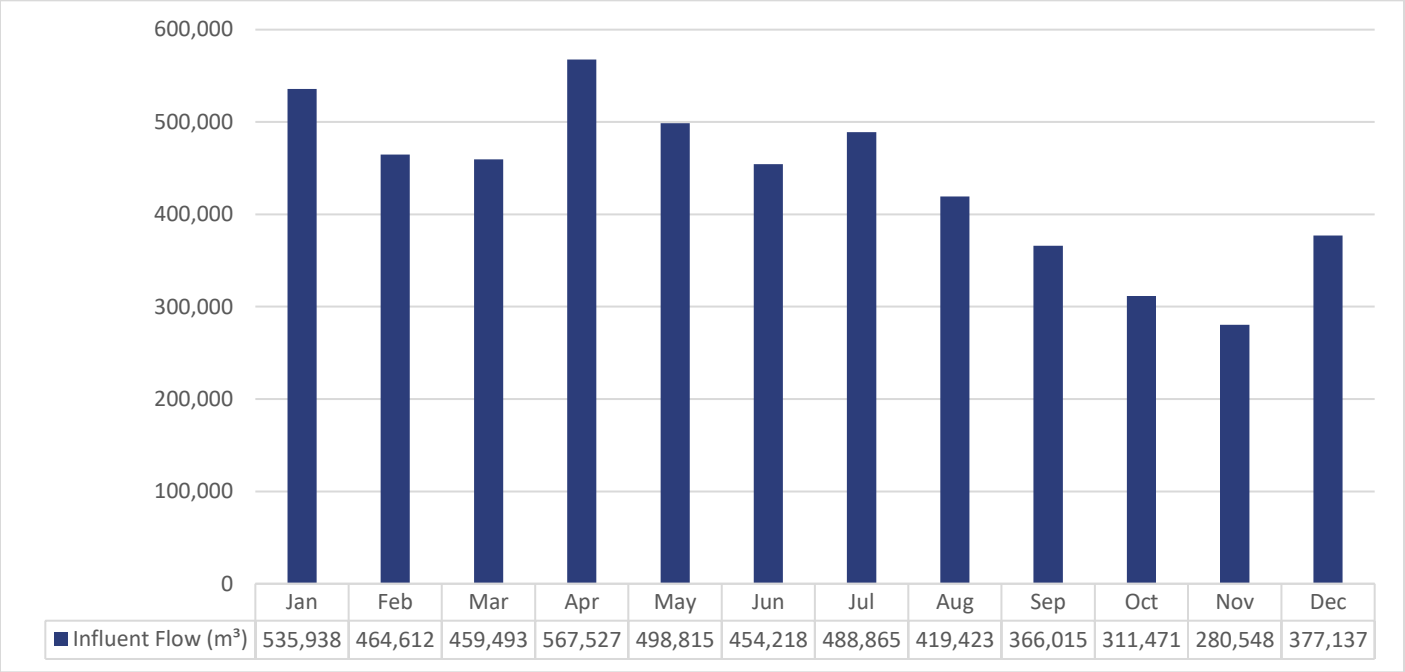
(a) ECA #1696-BPLL4R requires a summary and interpretation of all Influent and Imported Sewage monitoring data, and a review of the historical trend of the sewage characteristics and flow rates.

Attached as **Appendix VII** is a copy of the 2024 Performance Assessment Report (PAR) and loading calculations for the Lindsay WWTP raw and final effluent. The PAR contains: a tabulation of all monthly average raw sewage and final effluent sample results obtained during the reporting period, a tabulation of average daily flows, and monthly volumes for the reporting period, and a tabulation of calculated total loading of BOD/$CBOD_5$, suspended solids, total phosphorus, ammonia + ammonium as N (TAN), Total Kjeldahl Nitrogen (TKN), nitrite and nitrate concentrations in the final effluent.

The Lindsay WWTP has a Rated Capacity of 24,500 m^3/day and Actiflo rated capacity of 30,100 m^3 under ECA #1696-BPLL4R. ECA #1696-BPLL4R requires that everything practicable be undertaken to operate the Sewage Treatment Plant so that the annual average daily influent is within the Rated Capacity. The Rated Capacity of the Lindsay WWTP is 24,500 m^3/day and the 2024 annual average daily influent flow was 14,273.39 m^3/day or 58.26% of the Rated Capacity.

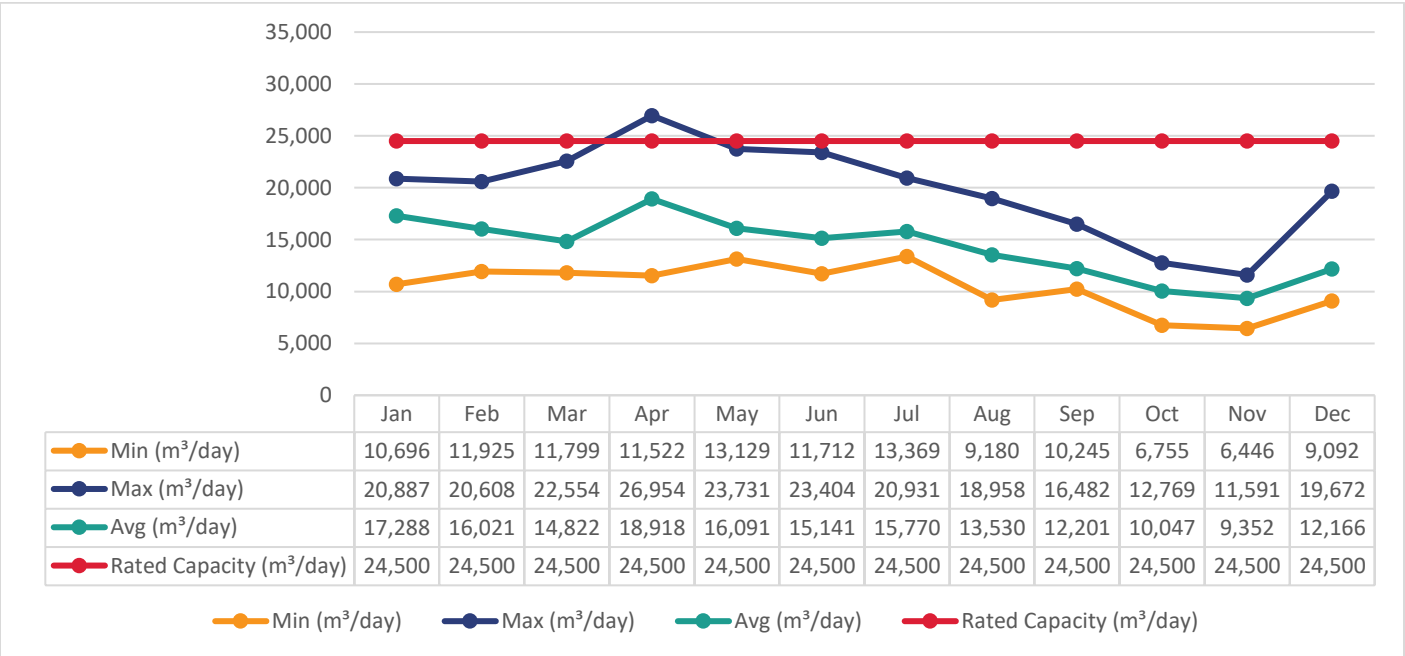
The total Influent flow in 2024 was 5,224,062.00 m^3.

Graph 1. 2024 Influent Flow Monthly Totals



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Influent Flow (m³)	535,938	464,612	459,493	567,527	498,815	454,218	488,865	419,423	366,015	311,471	280,548	377,137

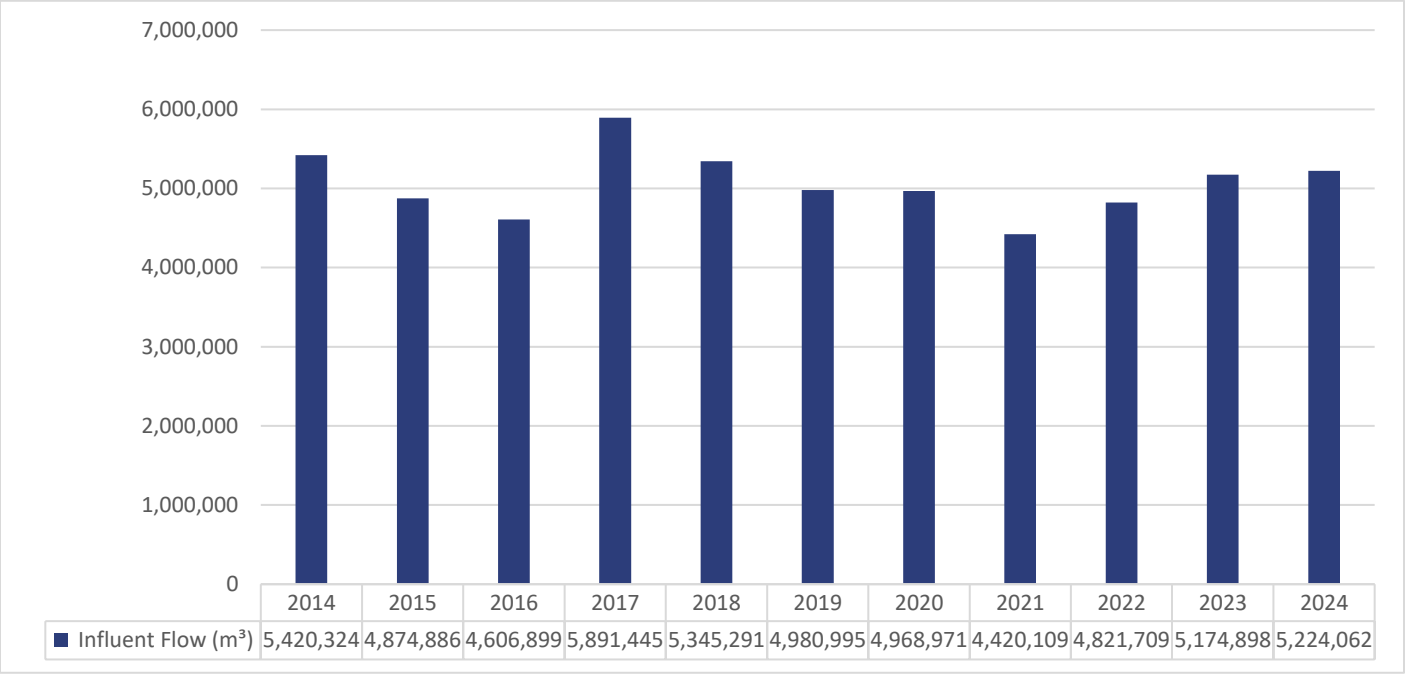
Graph 2. 2024 Influent Daily Minimum, Maximum and Average Flows



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Min (m³/day)	10,696	11,925	11,799	11,522	13,129	11,712	13,369	9,180	10,245	6,755	6,446	9,092
Max (m³/day)	20,887	20,608	22,554	26,954	23,731	23,404	20,931	18,958	16,482	12,769	11,591	19,672
Avg (m³/day)	17,288	16,021	14,822	18,918	16,091	15,141	15,770	13,530	12,201	10,047	9,352	12,166
Rated Capacity (m³/day)	24,500	24,500	24,500	24,500	24,500	24,500	24,500	24,500	24,500	24,500	24,500	24,500

Note: There may be instances where influent flow exceeded the Rated Capacity on a monthly basis. However, Rated Capacity is calculated as an annual average daily flow rate, which was met in 2024. Influent max daily flow increased from 22,544 m³/day in March to 26,954 m³/day in April 2024 due to heavy rain and snow melt.

Graph 3. Historical Influent Flows from 2014 - 2024

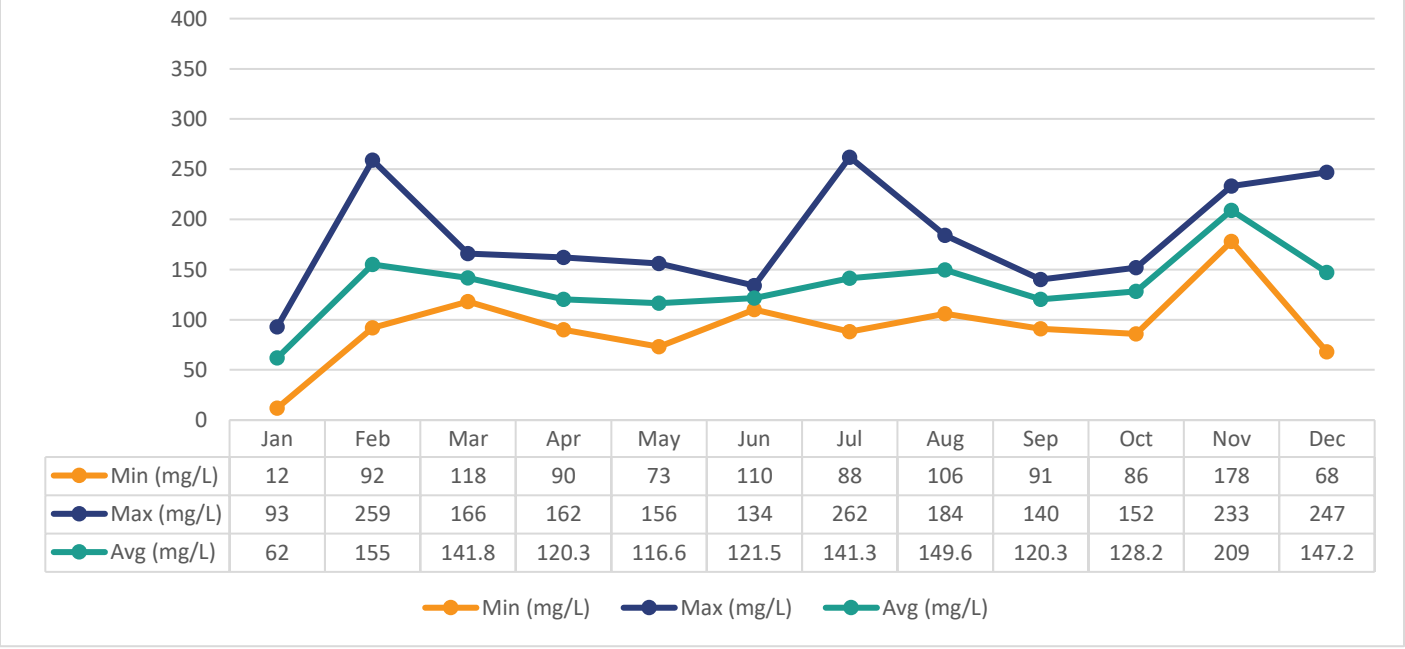


	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Influent Flow (m^3)	5,420,324	4,874,886	4,606,899	5,891,445	5,345,291	4,980,995	4,968,971	4,420,109	4,821,709	5,174,898	5,224,062

Biochemical Oxygen Demand (BOD_5)

ECA #1969-BPLL4R requires at least one composite sample to be collected and analyzed weekly for Biochemical Oxygen Demand (BOD_5). The Biochemical Oxygen Demand (BOD_5) monthly average results ranged from 32 mg/L to 209 mg/L.

Graph 4. 2024 Monthly BOD_5 Influent Sample Results

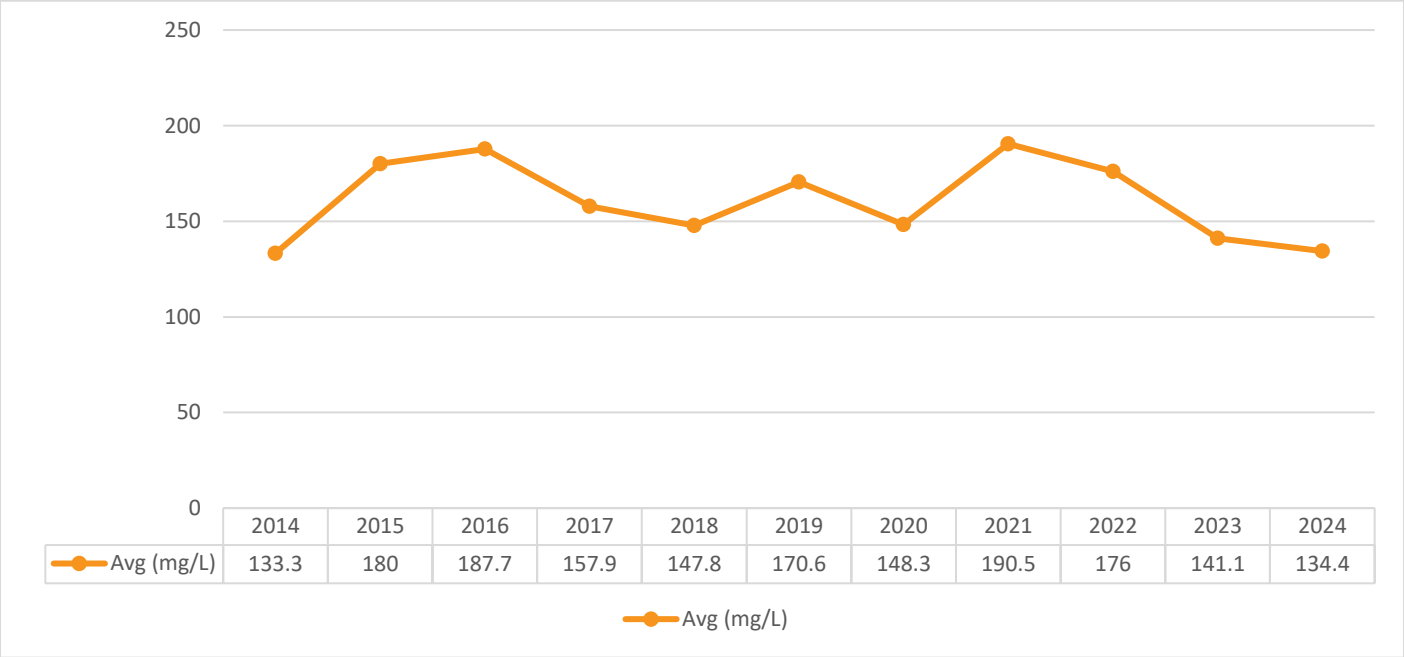


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Min (mg/L)	12	92	118	90	73	110	88	106	91	86	178	68
Max (mg/L)	93	259	166	162	156	134	262	184	140	152	233	247
Avg (mg/L)	62	155	141.8	120.3	116.6	121.5	141.3	149.6	120.3	128.2	209	147.2

Biochemical Oxygen Demand Historical Trends

The Biochemical Oxygen Demand annual average had been increasing steadily between 2014 and 2023, however results show that they returned to 2014 averages in 2024. Although not confirmed, increased raw influent concentrations could be related to increased abattoir and septage receiving, but has been decreasing in concentration since 2021.

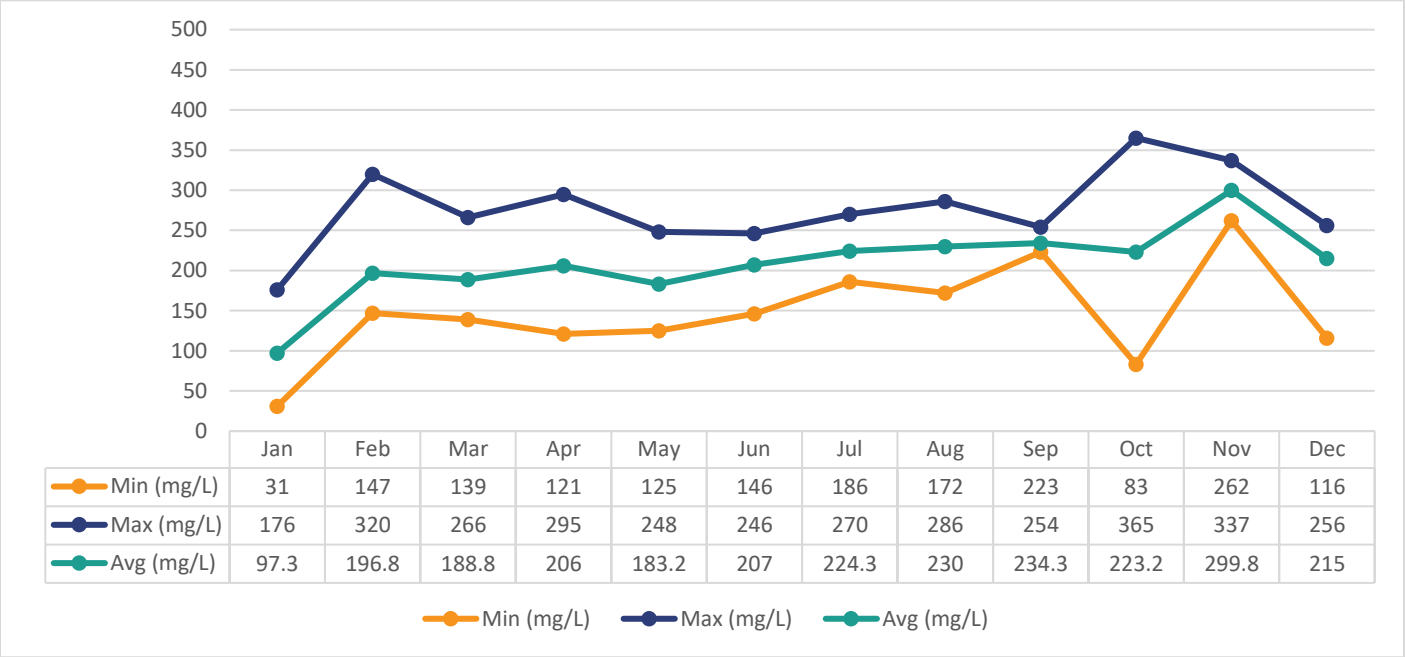
Graph 5. Historical Influent BOD_5 Annual Average Results 2014-2024



Total Suspended Solids (TSS)

ECA #1696-BPLL4R requires at least one composite sample be collected and analyzed weekly for Total Suspended Solids. The monthly average results ranged from 97.3 mg/L to 299.8 mg/L.

Graph 6. 2024 Monthly Total Suspended Solids Influent Sample Results

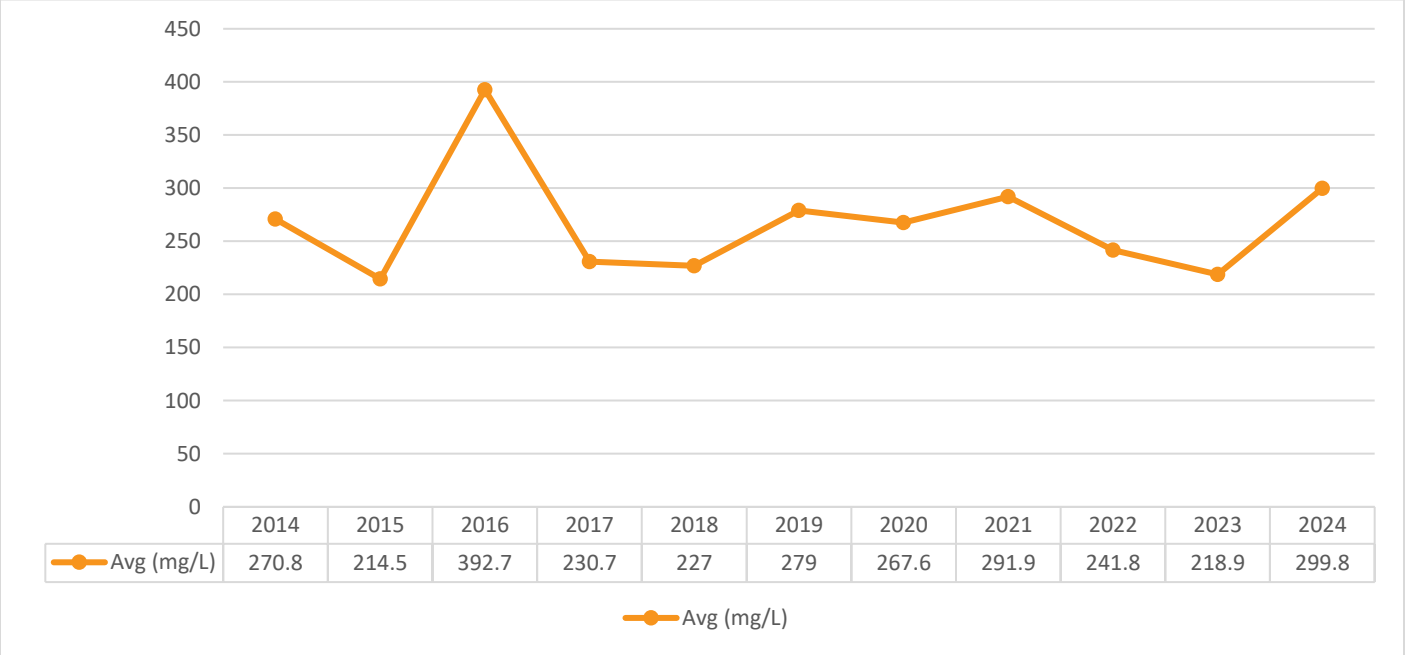


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Min (mg/L)	31	147	139	121	125	146	186	172	223	83	262	116
Max (mg/L)	176	320	266	295	248	246	270	286	254	365	337	256
Avg (mg/L)	97.3	196.8	188.8	206	183.2	207	224.3	230	234.3	223.2	299.8	215

Total Suspended Solids Historical Review

The Total Suspended Solids annual average has remained relatively stable between 2014 and 2024 with the peak annual average in 2016. Although not confirmed, raw influent concentrations could be related to abattoir and septage receiving.

Graph 7. Historical Influent Total Suspended Solids Sample Results 2014 - 2024

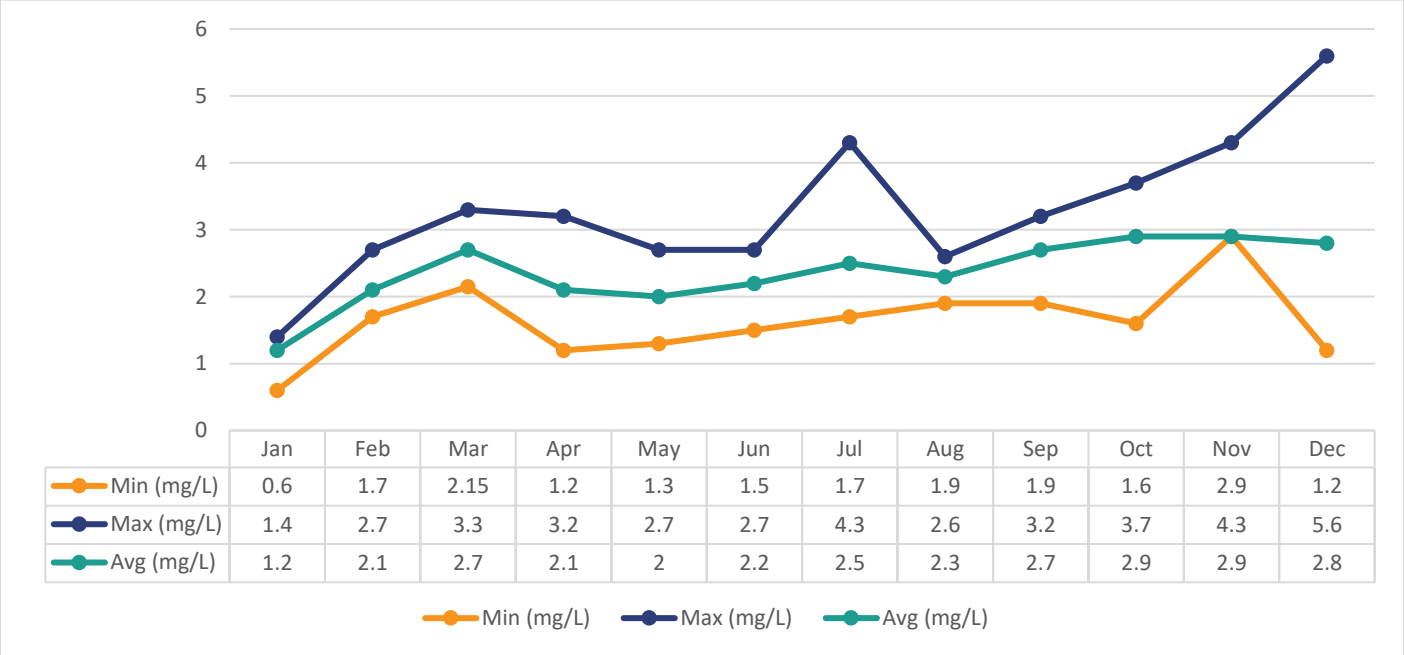


	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Avg (mg/L)	270.8	214.5	392.7	230.7	227	279	267.6	291.9	241.8	218.9	299.8

Total Phosphorus (TP)

ECA #1696-BPLL4R requires at least one composite sample be collected and analyzed weekly for Total Phosphorus. The monthly average Total Phosphorus results ranged from 1.2 mg/L to 2.9 mg/L.

Graph 8. 2024 Monthly Total Phosphorus Influent Sample Results

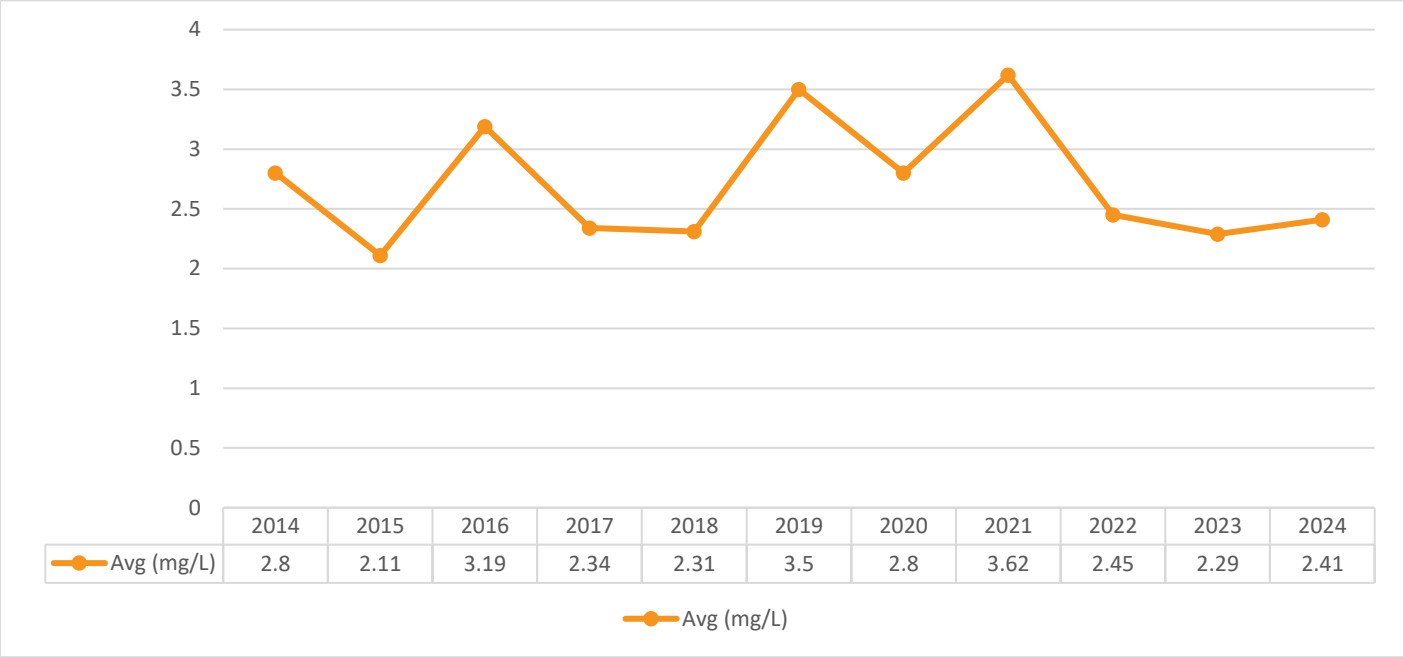


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Min (mg/L)	0.6	1.7	2.15	1.2	1.3	1.5	1.7	1.9	1.9	1.6	2.9	1.2
Max (mg/L)	1.4	2.7	3.3	3.2	2.7	2.7	4.3	2.6	3.2	3.7	4.3	5.6
Avg (mg/L)	1.2	2.1	2.7	2.1	2	2.2	2.5	2.3	2.7	2.9	2.9	2.8

Total Phosphorus Historical Trends

The Total Phosphorus annual average has increased between 2014 and 2024 with the minimum value being 2.04 mg/L and the maximum value being 3.62 mg/L. The Total Phosphorus has however decreased from 2021 to 2022 and remained relatively stable to 2024. Although not confirmed, raw influent concentrations could be related to abattoir and septage receiving.

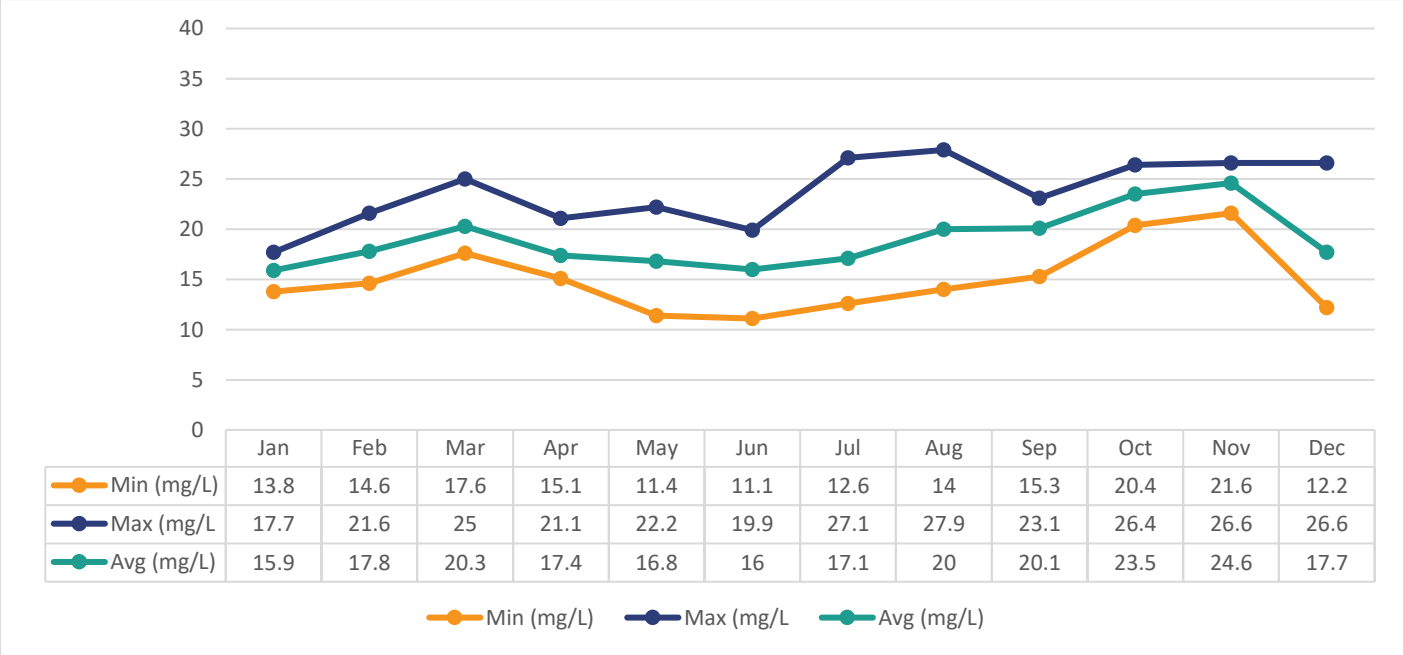
Graph 9. Historical Influent Total Phosphorus Sample Results 2014 - 2024



Total Kjeldahl Nitrogen (TKN)

ECA #1696-BPLL4R requires at least one composite sample be collected and analyzed weekly for Total Kjeldahl Nitrogen. The monthly average Total Kjeldahl Nitrogen results ranged from 15.9 mg/L to 24.6 mg/L.

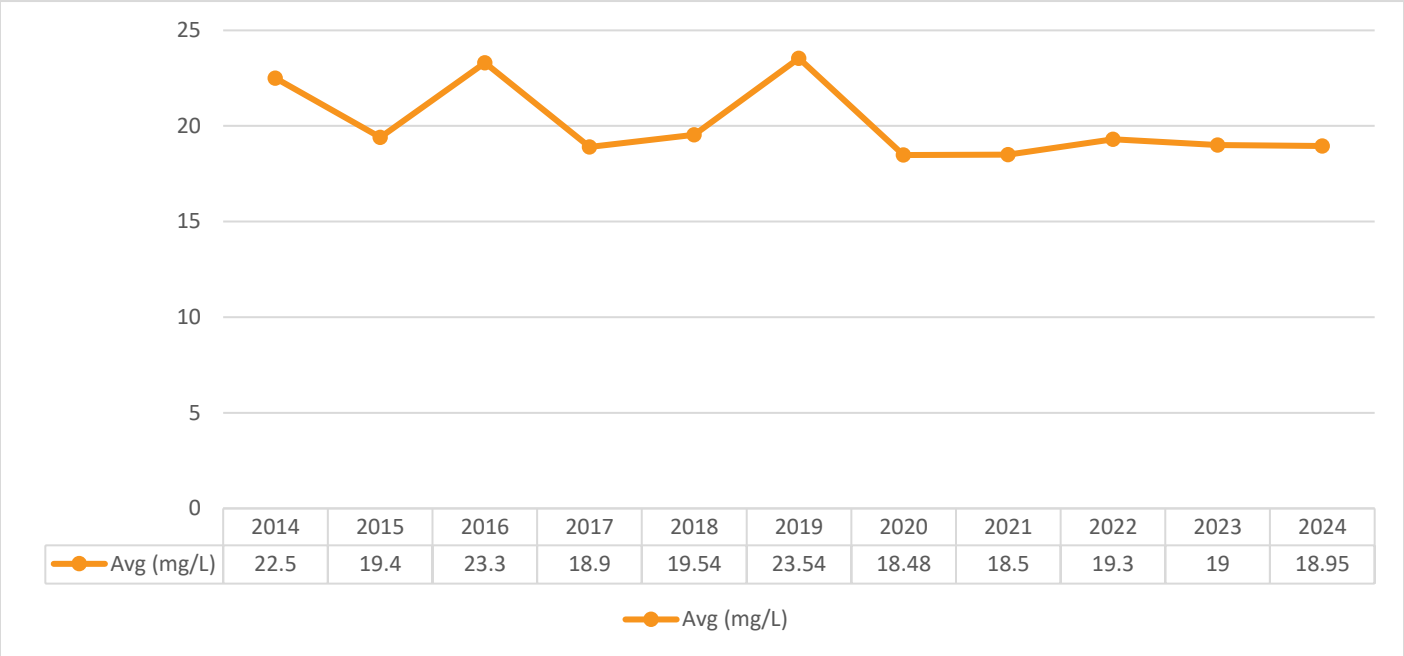
Graph 10. 2024 Monthly Total Kjeldahl Nitrogen Influent Sample Results



Total Kjeldahl Nitrogen Historical Review

The Total Kjeldahl Nitrogen annual average has remained fairly consistent between 2014 ad 2024. The minimum annual average occurred in 2020 and the maximum annual average occurred in 2019.

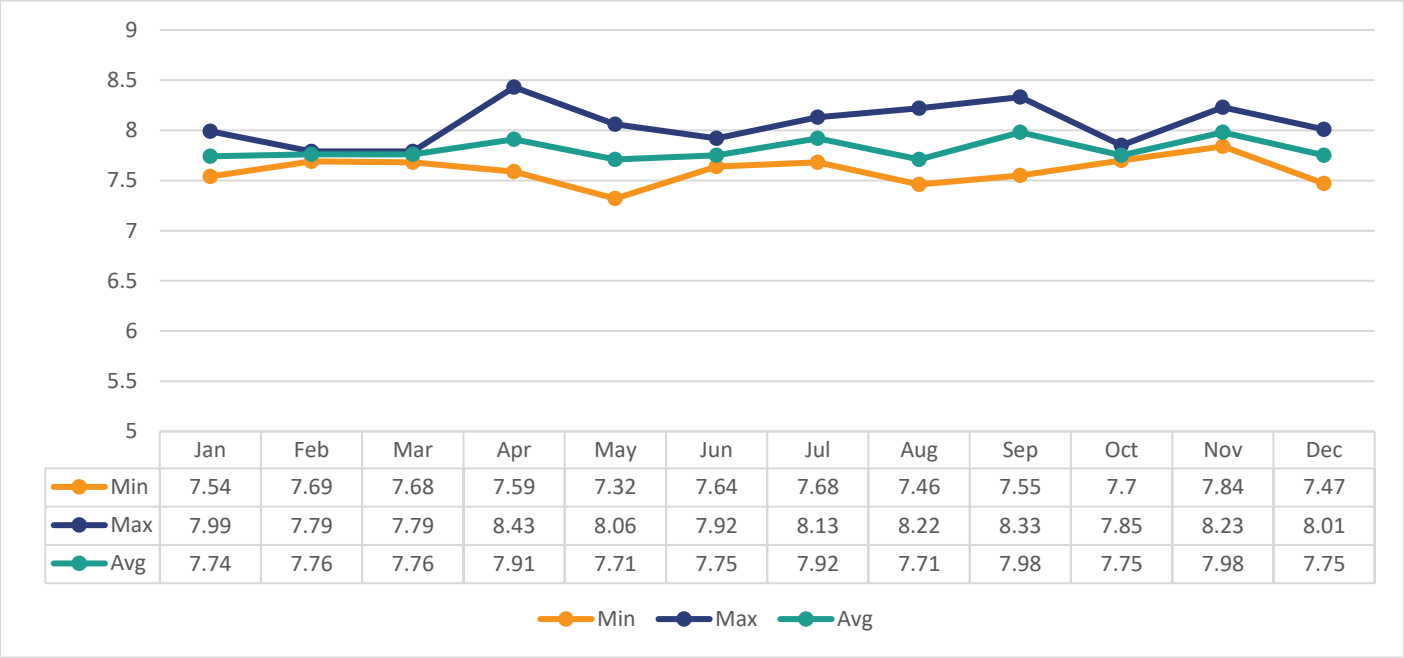
Graph 11. Historical Influent Total Kjeldahl Nitrogen Sample Results 2014 - 2024



pH

ECA #1696-BPLL4R does not require a pH sample be collected nor prescribes the sample frequency on the influent. The monthly average pH results were fairly consistent throughout 2024 ranging from 7.76 to 7.98.

Graph 12. 2024 Monthly pH Influent Comparisons



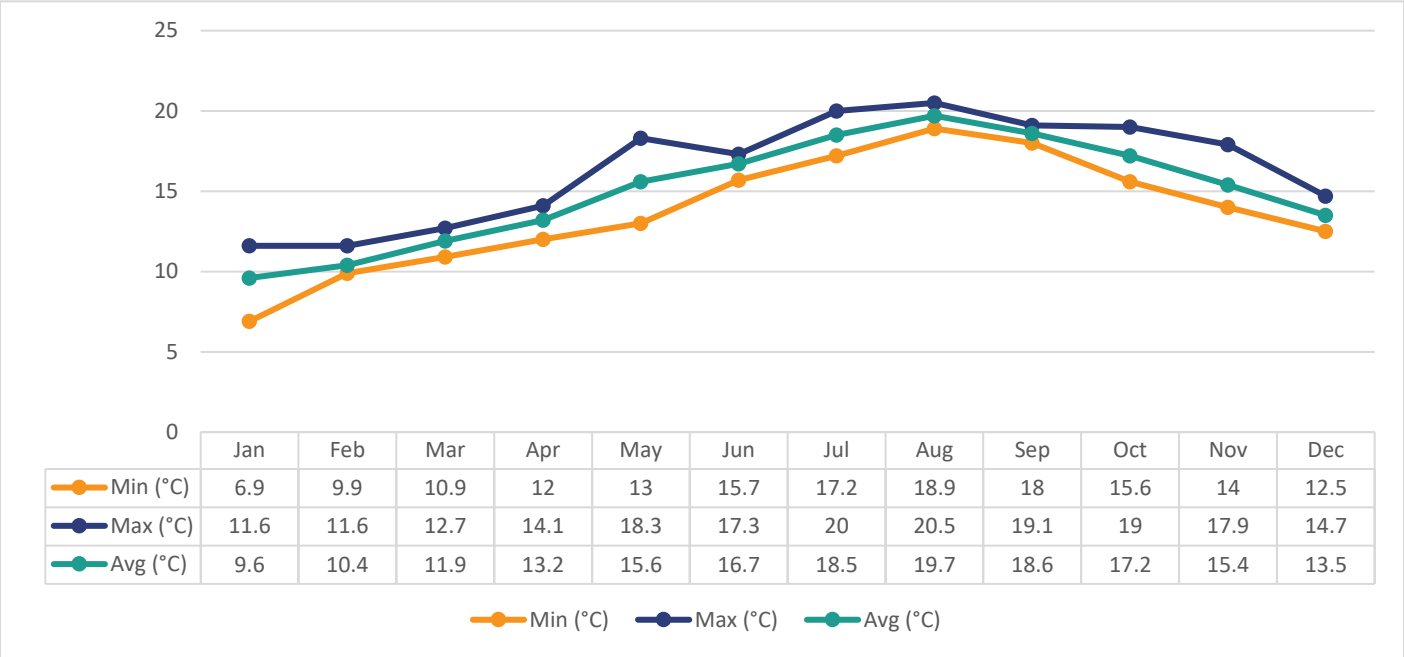
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Min	7.54	7.69	7.68	7.59	7.32	7.64	7.68	7.46	7.55	7.7	7.84	7.47
Max	7.99	7.79	7.79	8.43	8.06	7.92	8.13	8.22	8.33	7.85	8.23	8.01
Avg	7.74	7.76	7.76	7.91	7.71	7.75	7.92	7.71	7.98	7.75	7.98	7.75

Historical pH data is only available from 2016 to 2024 and the pH levels in 2024 fluctuated between 7.32 and 8.43.

Temperature

ECA #1696-BPLL4R does not require a temperature sample be collected or prescribe sample frequency on the influent. Samples were collected throughout 2024. Variations in results were consistent with seasonal fluctuations. Historically, the influent water temperature drops in the freezing season (i.e. winter) and raises in the non-freezing season (i.e. summer) and this trend continued throughout 2024. Historical data is only available from 2016 to 2024 and the temperature in 2024 ranged from 6.9 °C to 20.5 °C.

Graph 13. 2024 Monthly Influent Temperature Comparisons



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Min (°C)	6.9	9.9	10.9	12	13	15.7	17.2	18.9	18	15.6	14	12.5
Max (°C)	11.6	11.6	12.7	14.1	18.3	17.3	20	20.5	19.1	19	17.9	14.7
Avg (°C)	9.6	10.4	11.9	13.2	15.6	16.7	18.5	19.7	18.6	17.2	15.4	13.5

Imported Sewage

Imported sewage is sewage that is hauled to the sewage treatment plant by licensed waste haulers. At the Lindsay WWTP, Imported Sewage consists of sewage hauled to the Receiving Station at 38 Lagoon Rd., Lindsay and abattoir waste hauled to the Lindsay WWTP onsite storage lagoon.

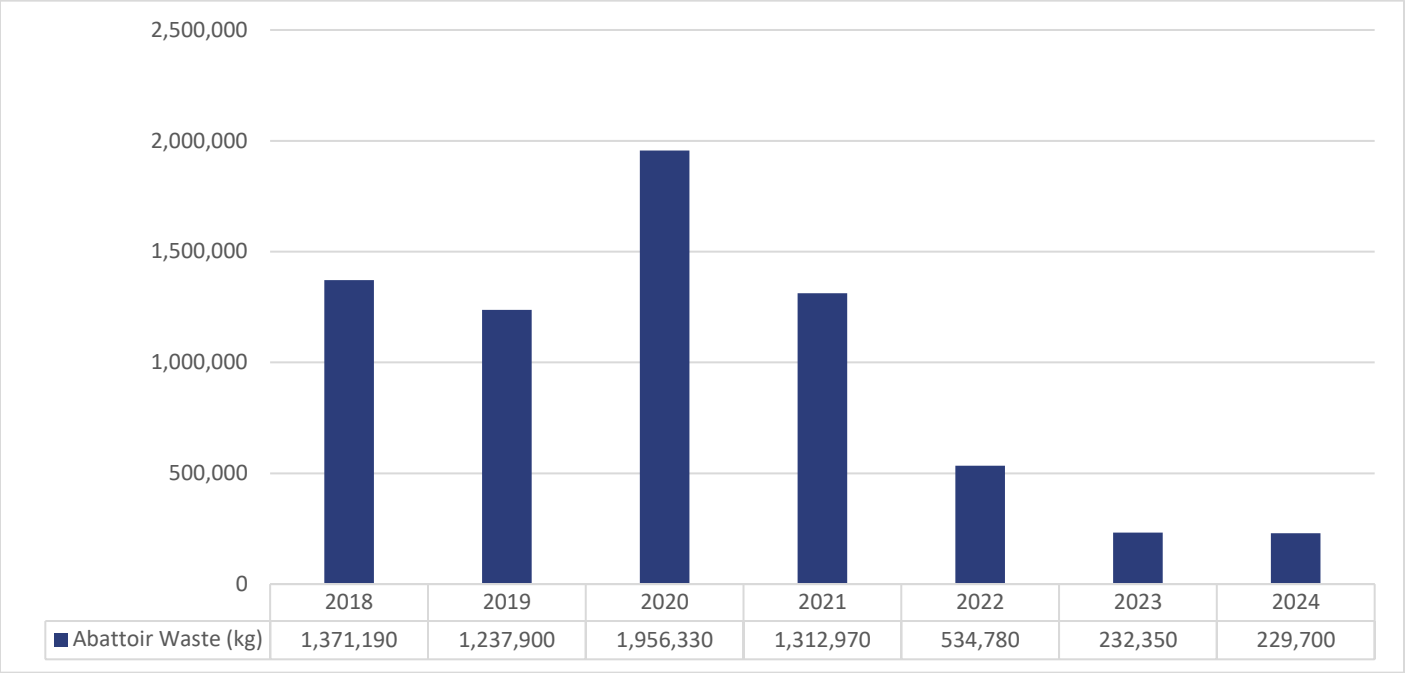
ECA #1696-BPLL4R requires monthly sampling of Imported Sewage.

Abattoir Waste

Waste from local Abattoirs is hauled to the Lindsay WWTP and deposited into Lagoon #5, which acts as a storage lagoon. During high flow event, excess raw water from the collection system is diverted into Lagoon #5 where it is stored until the collection system flows subside enough to feed the water in Lagoon #5 back into the facility inlet to be treated. The abattoir waste mixes with the raw water in Lagoon #5 and is returned to the wastewater treatment plant through the inlet.

Trucks hauling abattoir waste are weighed at the Lindsay Landfill inbound scale and the outbound scale and the difference between the two readings is the amount of abattoir waste deposited into Lagoon #5. The amount of abattoir waste deposited in 2024 was 229,700 kg. This was a decrease in abattoir waste deposited over 2023, equaling a 1.14 % decrease in volume.

Graph 14. Historical Abattoir Volume Comparisons



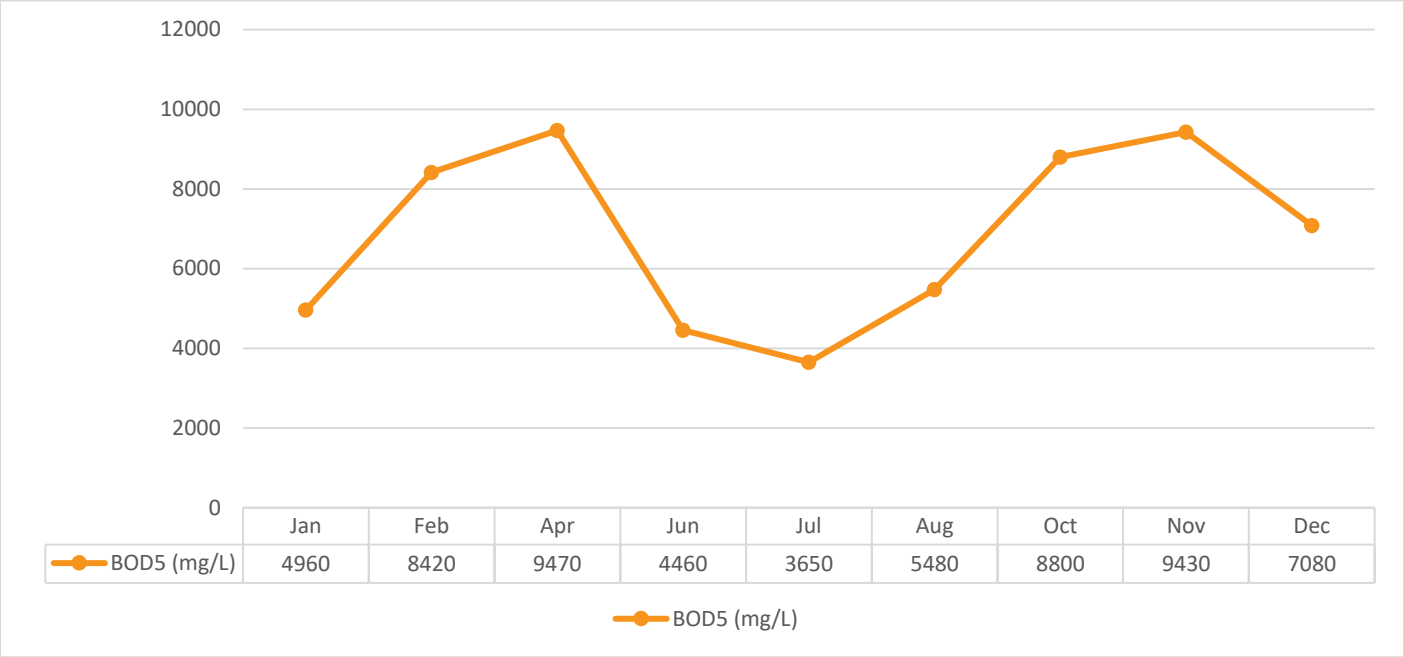
	2018	2019	2020	2021	2022	2023	2024
Abattoir Waste (kg)	1,371,190	1,237,900	1,956,330	1,312,970	534,780	232,350	229,700

ECA #1696-BPLL4R requires a grab sample be collected monthly and analyzed for BOD_5, Total Suspended Solids, Total Phosphorus and Total Kjeldahl Nitrogen for each type of imported sewage. Although not required by the ECA, Total Ammonia Nitrogen was sampled and analyzed monthly in 2024. An Abattoir sample was not collected in March, May, and September 2024. See Section N for further details.

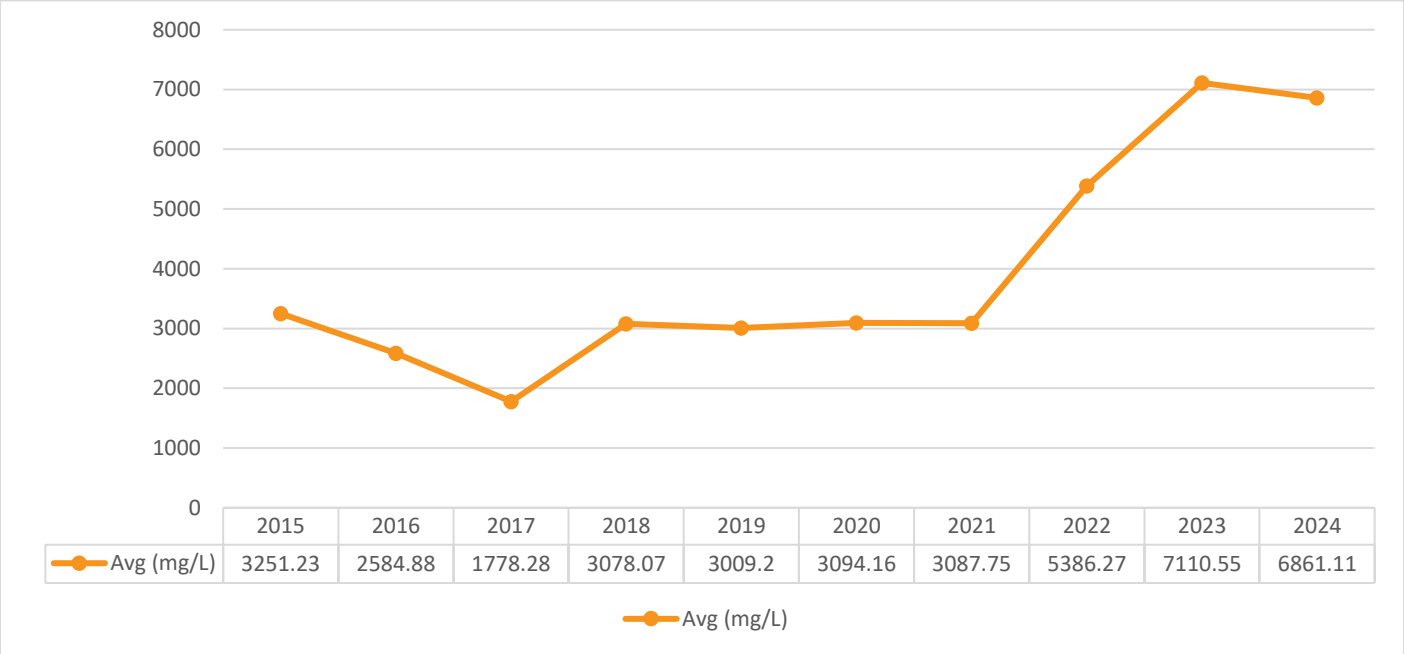
Biochemical Oxygen Demand (BOD_5)

ECA #1696-BPLL4R requires one grab sample be collected monthly and analyzed for BOD_5. The BOD_5 sample results ranged from 3,650 mg/L to 9,470 mg/L in 2024.

Graph 15. 2024 Monthly BOD_5 Abattoir Waste Sample Results



Graph 16. Historical BOD_5 Abattoir Waste Sample Results 2015 - 2024

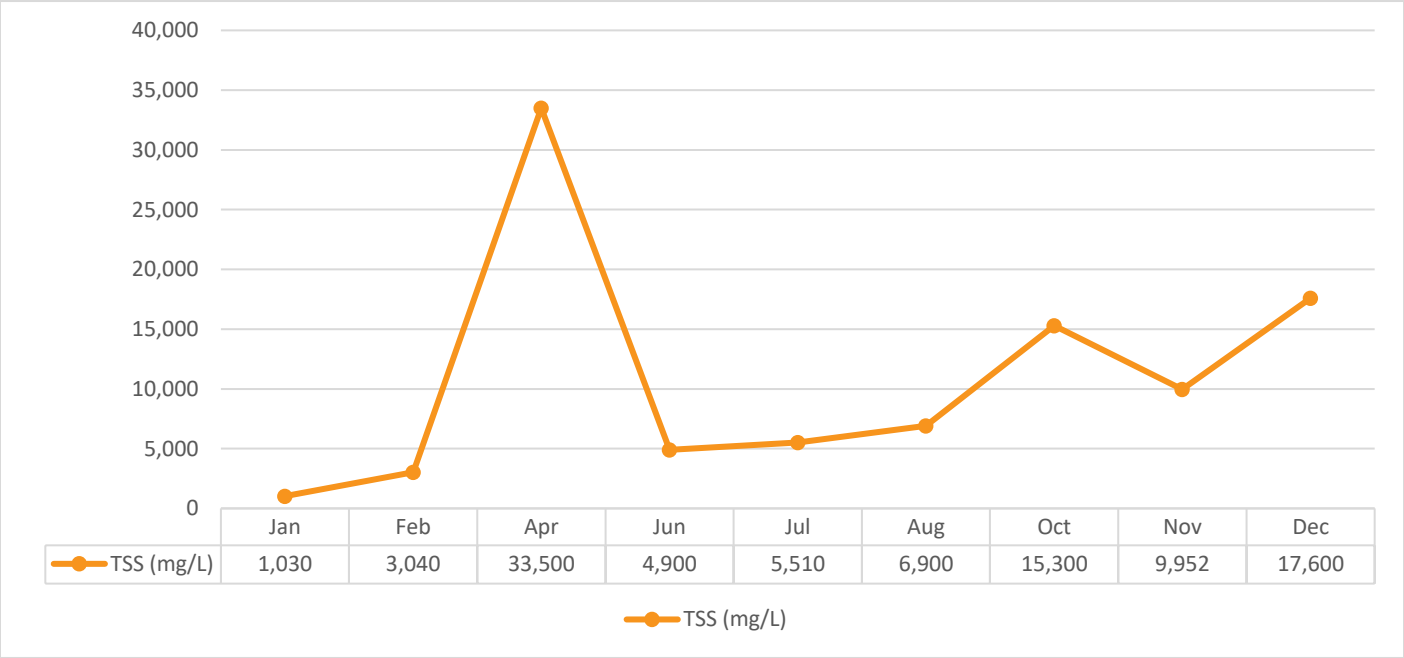


The BOD_5 annual average remained fairly consistent between 2015 and 2021. There was a large increase in average BOD_5 in 2022, and continued into 2024. The minimum annual average concentration occurred in 2017 and the maximum annual average concentration occurred in 2023.

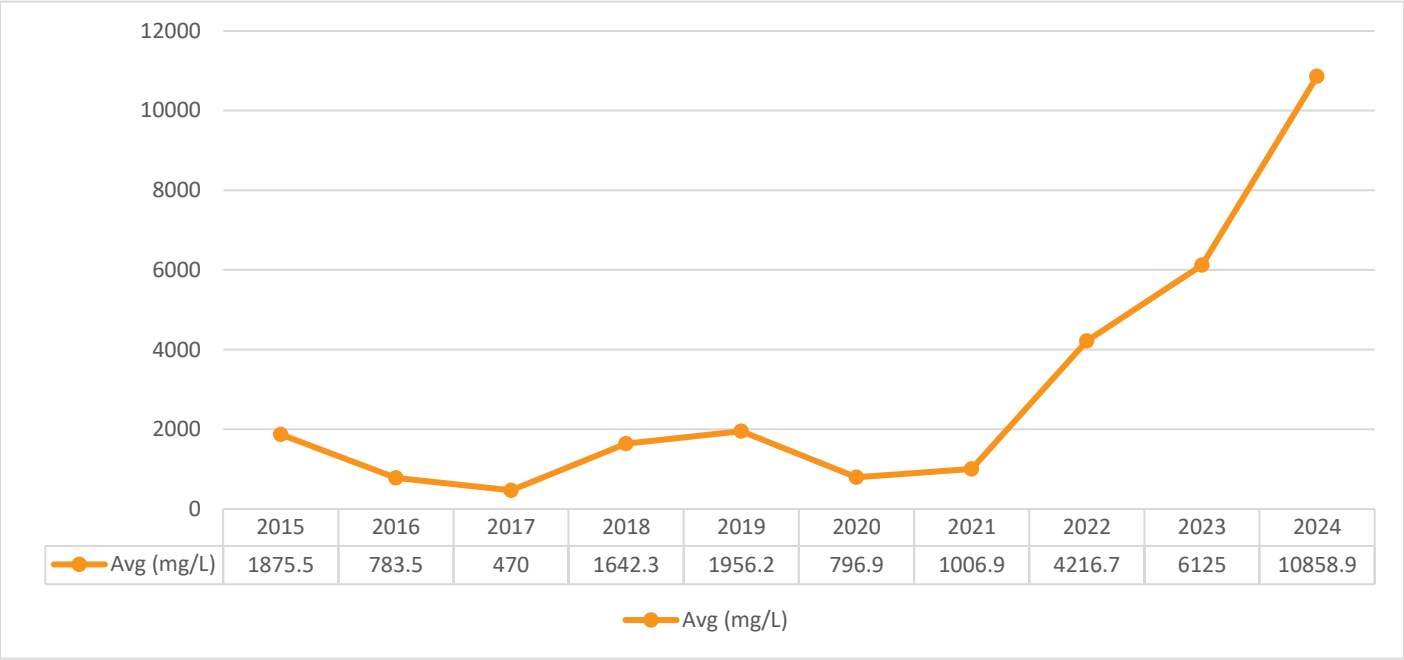
Total Suspended Solids

ECA #1696-BPLL4R requires one grab sample be collected monthly and analyzed for Total Suspended Solids. The Total Suspended Solids sample results ranged from 1,030 mg/L to 33,500 mg/L in 2024.

Graph 17. 2024 Monthly Total Suspended Solids Abattoir Waste Sample Results



Graph 18. Historical Total Suspended Solids Abattoir Waste Sample Results 2015 – 2024

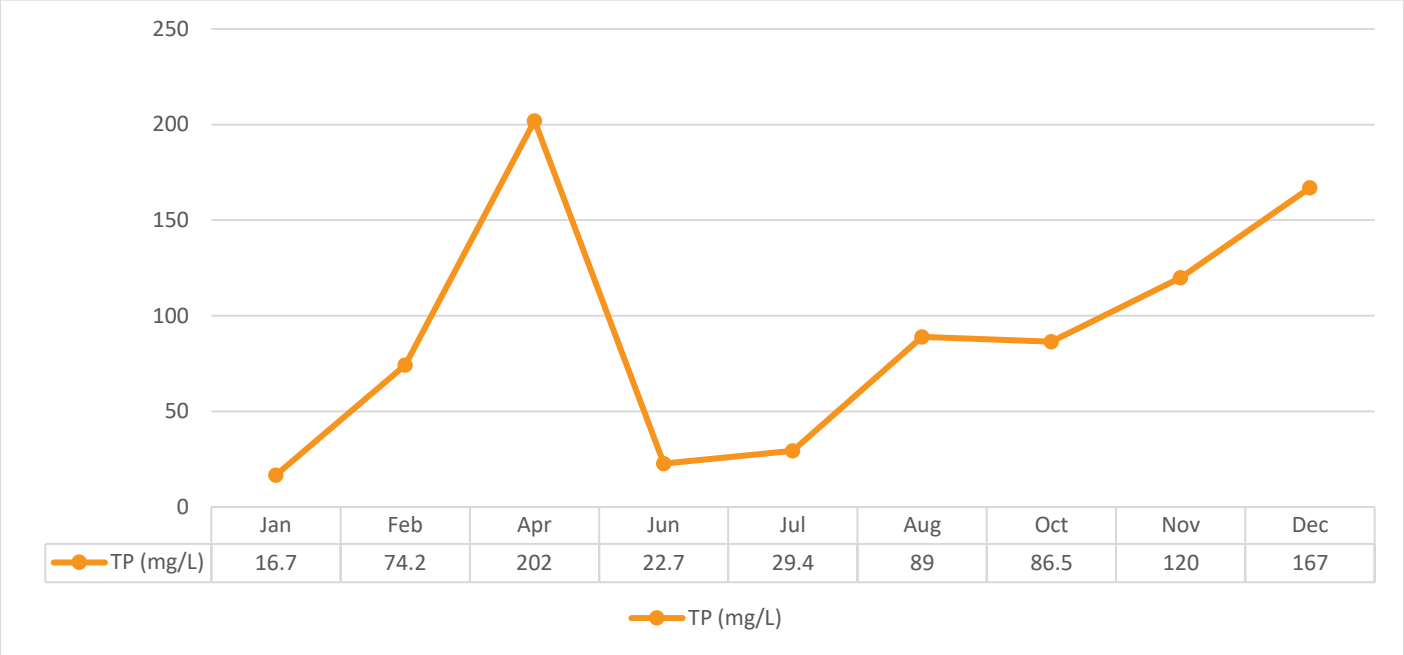


The Total Suspended Solids annual average has remained fairly consistent between 2015 and 2021. There was a significant increase in the annual average in 2022, continuing through 2024. The minimum annual average concentration occurred in 2017 and the maximum annual average concentration occurred in 2024.

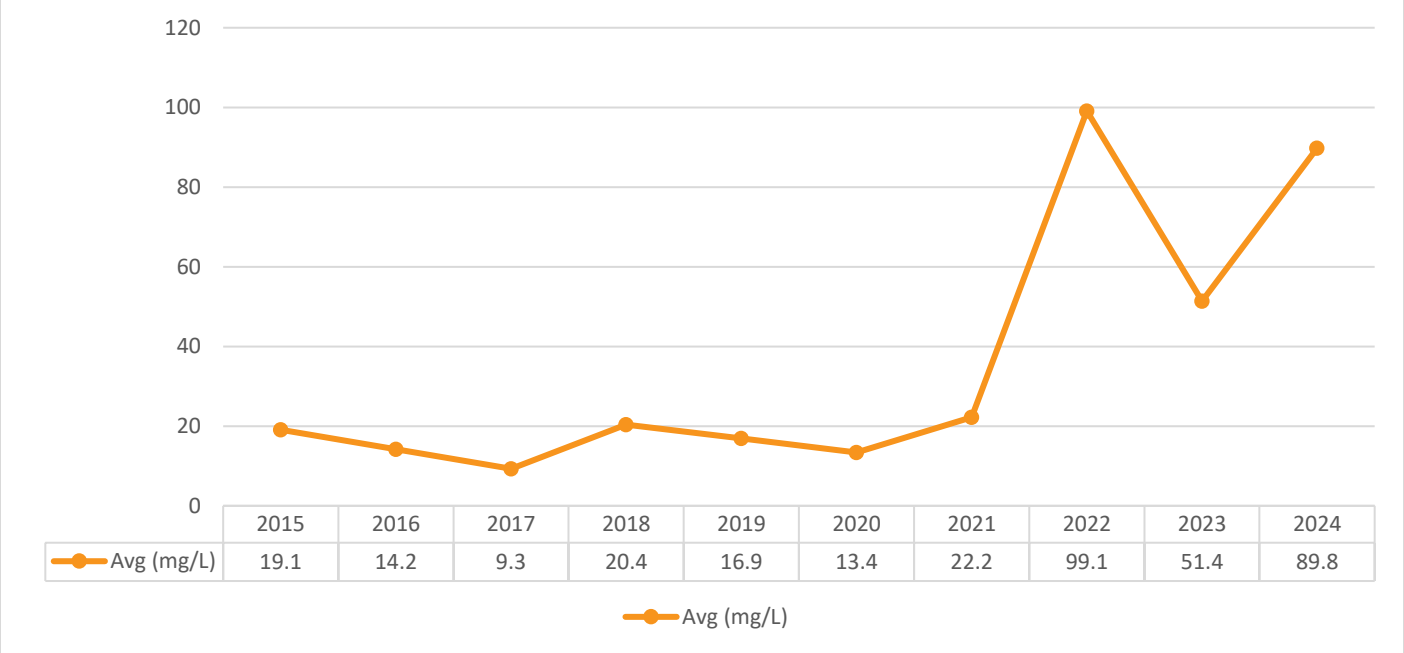
Total Phosphorus

ECA #1696-BPLL4R requires one grab sample be collected monthly and analyzed for Total Phosphorus. Results ranged from 16.7 mg/L to 202 mg/L in 2024.

Graph 19. 2024 Monthly Total Phosphorus Abattoir Waste Sample Results



Graph 20. Historical Total Phosphorus Abattoir Waste Sample Results 2015 - 2024



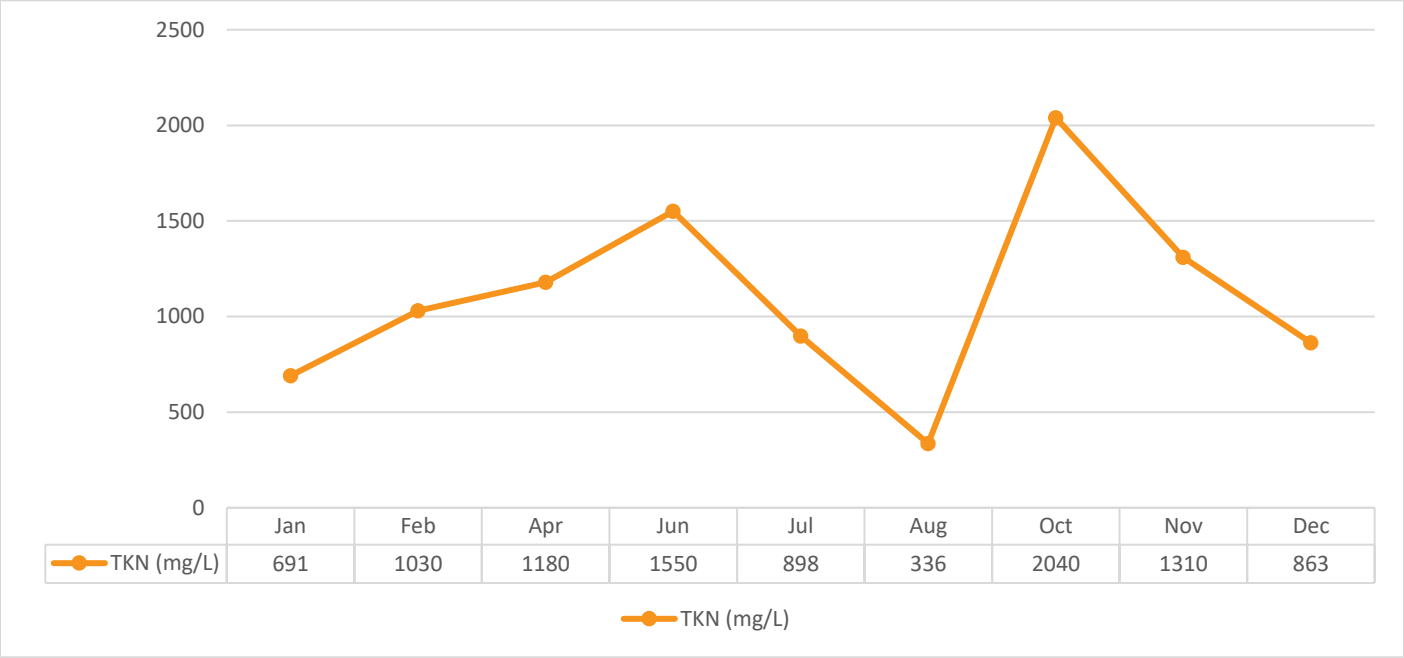
Total Phosphorus annual average remained fairly consistent between 2015 and 2021. There was a significant increase in the annual average in 2022, but dropping through 2023 and increased in

2024. The minimum annual average concentration occurred in 2017 and the maximum annual average concentration occurred in 2022.

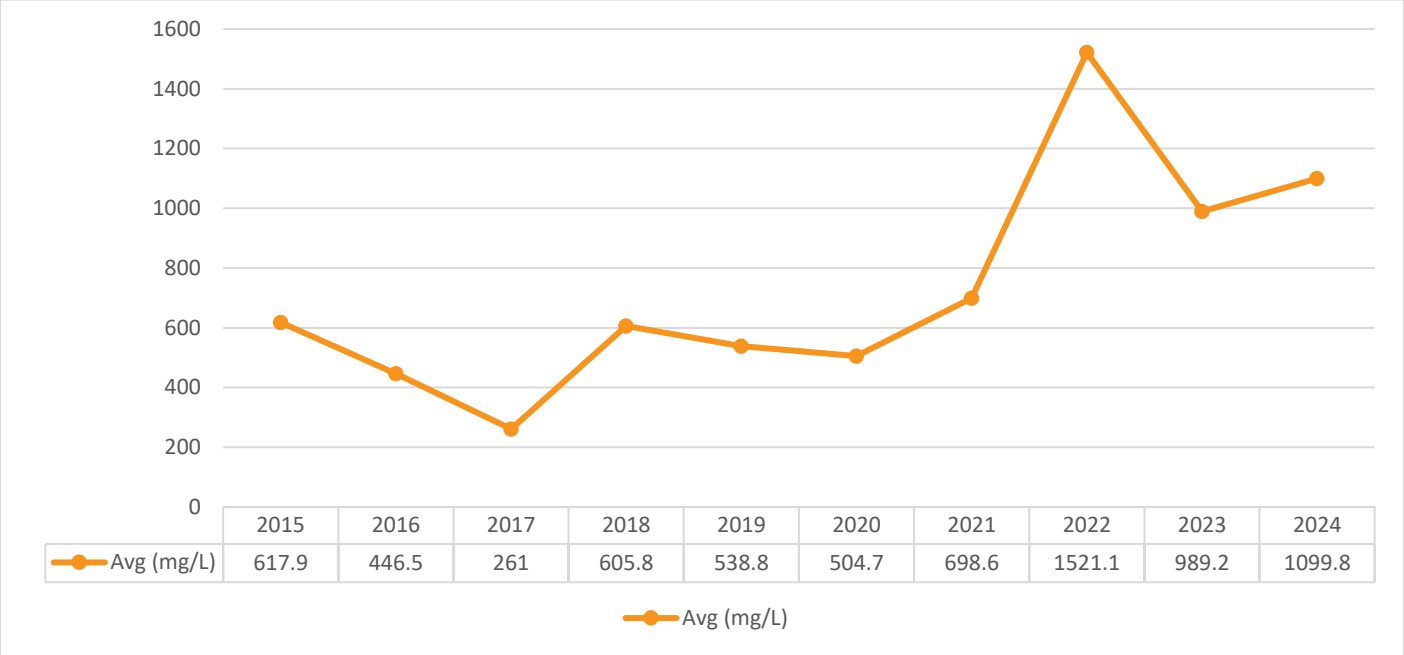
Total Kjeldahl Nitrogen (TKN)

ECA #1696-BPLL4R requires one grab sample be collected monthly and analyzed for Total Kjedlahl Nitrogen. The Total Kjeldahl Nitrogen results ranged from 336 mg/L to 2,040 mg/L in 2024.

Graph 21. 2024 Monthly Total Kjeldahl Nitrogen Abattoir Waste Sample Results



Graph 22. Historical Total Kjeldahl Nitrogen Abattoir Waste Sample Results 2015 - 2024

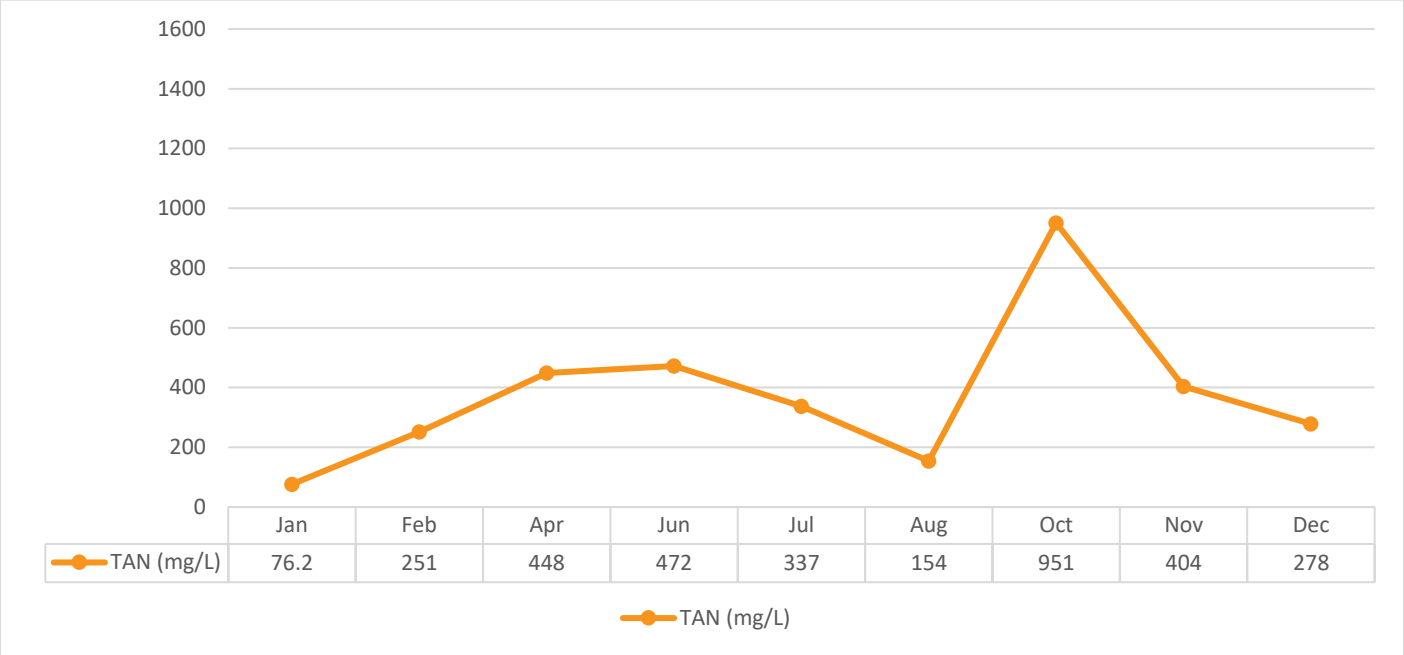


The Total Kjeldahl Nitrogen annual average has ranged between 261.0 mg/L and 1,521.1 mg/L. The minimum annual average concentration occurred in 2017 and the maximum annual average occurred in 2022. There was a significant increase from 2021 to 2022 with a decrease from 2022 to 2023, and has slightly increased from 2023 to 2024.

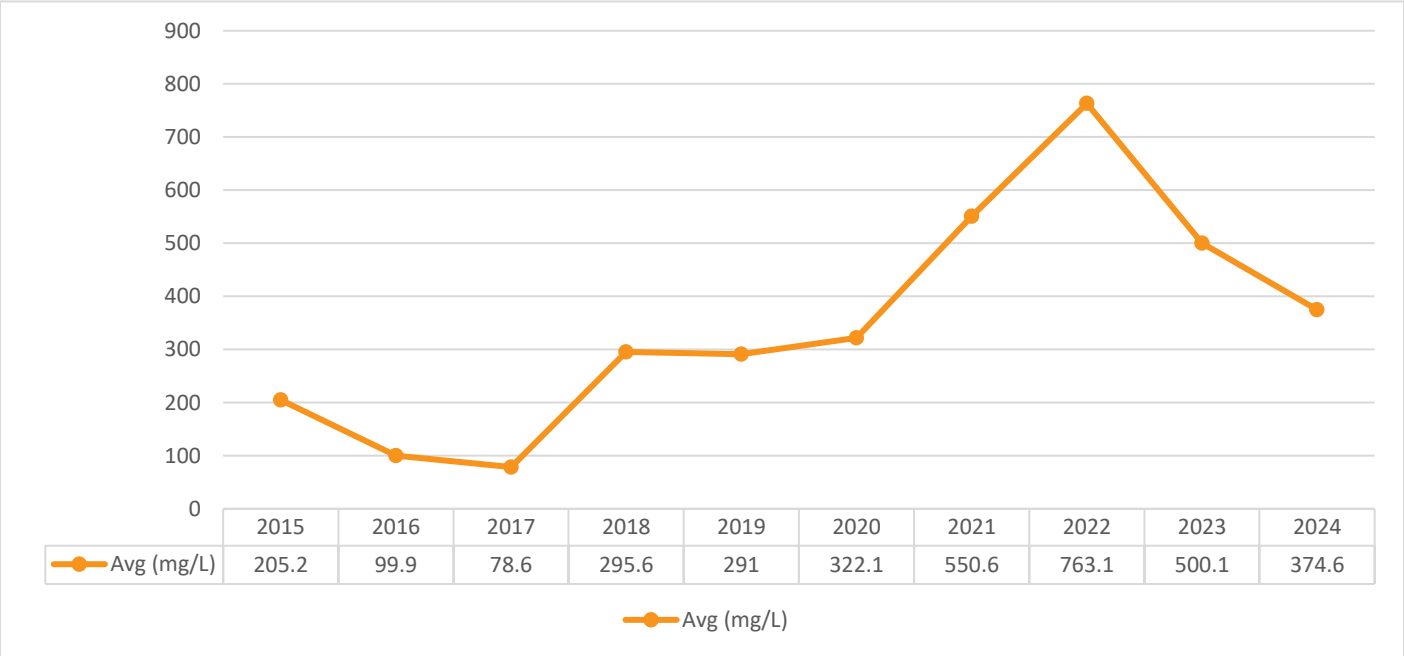
Total Ammonia Nitrogen (TAN)

One grab sample was collected of the Abattoir waste each month in 2024 and analyzed for Total Ammonia Nitrogen. The results ranged from 76.2 mg/L to 951 mg/L.

Graph 23. 2024 Monthly Total Ammonia Nitrogen Abattoir Waste Sample Results



Graph 24. Historical Total Ammonia Nitrogen Abattoir Waste Sample Results 2015 - 2024



Since 2015, the Total Ammonia Nitrogen annual average has fluctuated between 78.6 mg/L and 763.1 mg/L. The minimum annual average concentration occurred in 2017 and the maximum

annual average concentration occurred in 2022. There has been a steady increase in the annual average concentration since 2020 to 2022. There has been a steady decrease in the annual average concentration since 2022 to 2024.

Receiving Station

ECA #1696-BPLL4R requires a grab sample monthly of the Receiving Station Waste, testing for BOD_5, Total Suspended Solids, Total Phosphorus, and Total Kjeldahl Nitrogen. Although not required by the ECA, Total Ammonia Nitrogen was sampled and analyzed monthly in 2024.

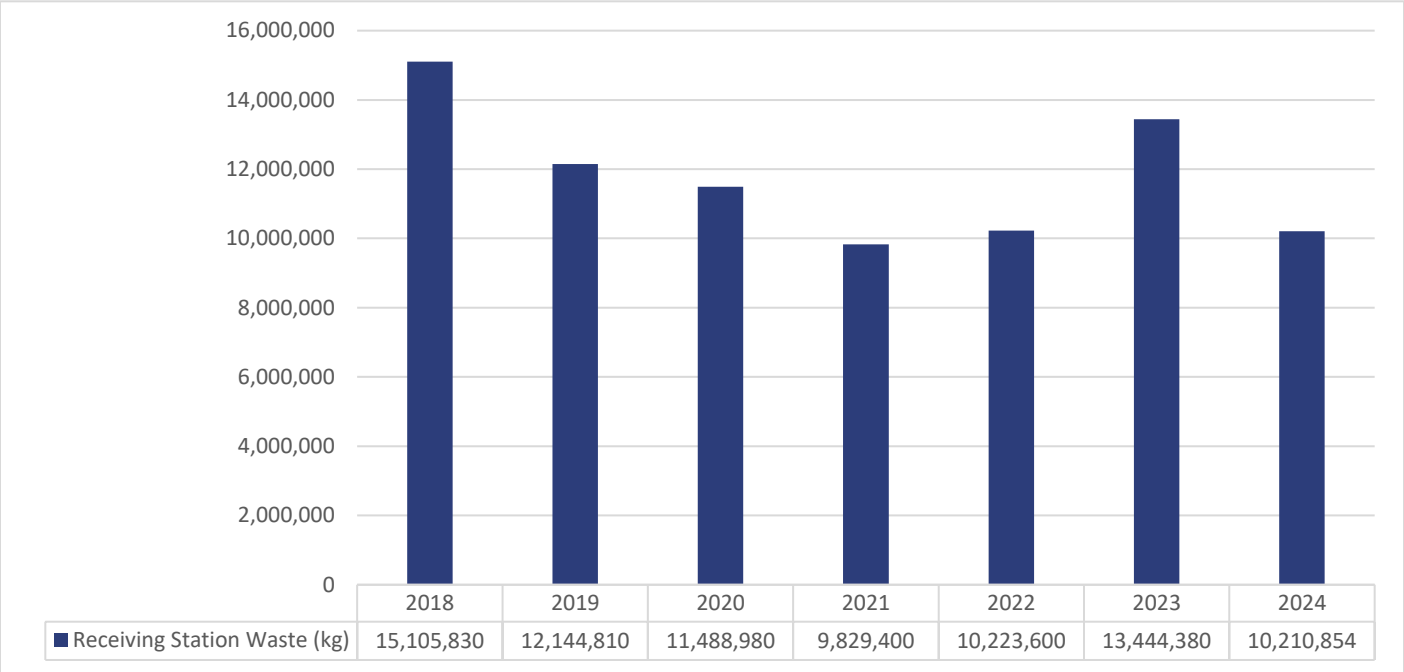
As sampling of the Receiving Station Waste began in November 2018 a historical review of the results is limited. The 2018 – 2024 results are included below. It should be noted that the sewage from the Receiving Station flows to the Inlet Building where the Inlet (Raw) samples are collected, so Receiving Station water would form a portion of the Inlet (Raw) sample results.

Table 1. Historical Receiving Station Sample Results

Parameter	Nov/Dec 2018	2019 Annual	2020 Annual	2021 Annual	2022 Annual	2023 Annual	2024 Annual
BOD_5 (mg/L)	3492	3094.2	4549.4	4797.77	5545.17	4408.4	3800.58
Total Suspended Solids (mg/L)	1810	5397.5	8390.0	7046.85	6165.58	8034.4	7045.67
Total Phosphorus (mg/L)	18.6	128.75	106.42	132.5	149.72	93.6	108.18
Total Kjeldahl Nitrogen (mg/L)	150	2239.5	1238.4	1148.05	2120.5	1225.7	1045.08
Total Ammonia Nitrogen (mg/L)	80.25	1417.8	753.74	788.35	1081.24	841.1	859.5

Trucks hauling waste are weighed at the Lindsay Ops Landfill inbound scale prior to arriving at the Receiving Station and again at the outbound scale after leaving the Receiving Station. The difference between the two scale readings is the amount of waste deposited into the Lagoon Rd. Receiving Station. The amount of waste deposited into the receiving station in 2024 was 10,210,854 kg. This is 24.05 % decrease in the volume deposited in 2023.

Graph 25. Historical Receiving Station Volume Comparisons



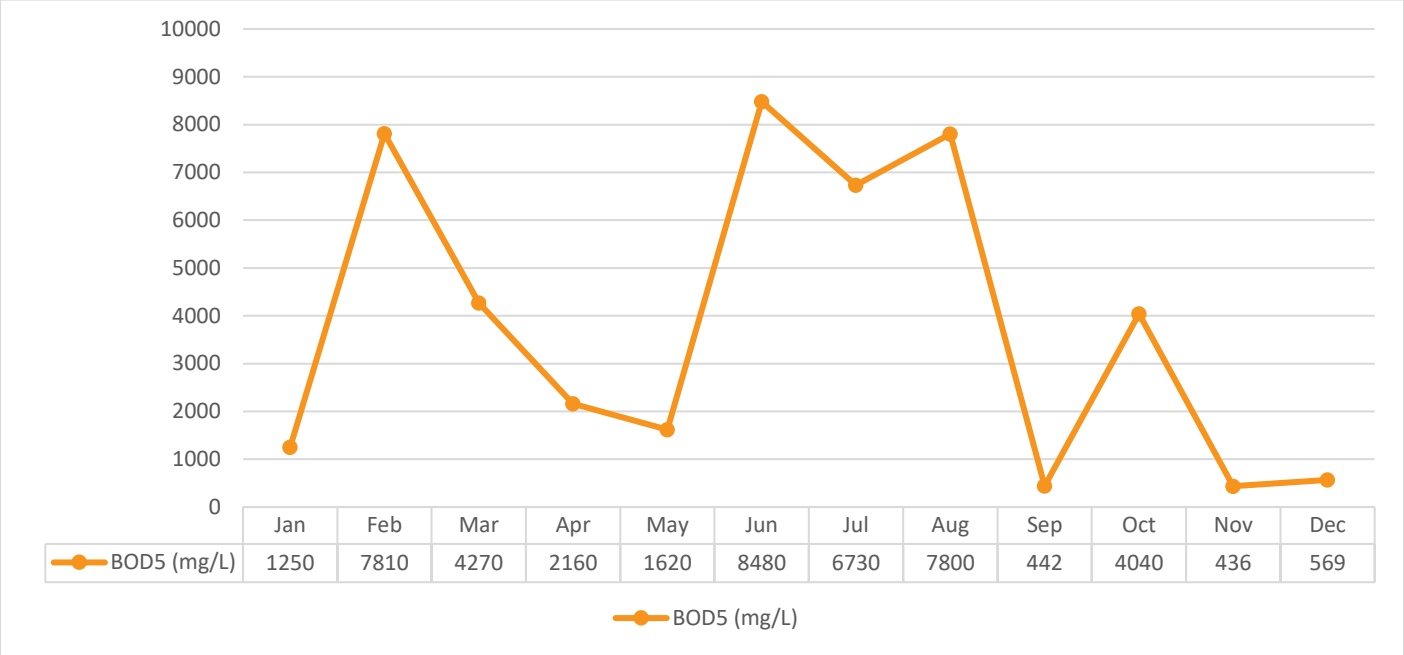
Sample Results

ECA #1696-BPLL4R requires a grab sample be collected monthly and analyzed for BOD_5, Total Suspended Solids, Total Phosphorus and Total Kjeldahl Nitrogen. Although not required by the ECA, Total Ammonia Nitrogen was sampled and analyzed monthly in 2024.

Biochemical Oxygen Demand (BOD_5)

ECA #1696-BPLL4R requires one grab sample be collected monthly and analyzed for BOD_5. The BOD_5 sample results ranged from 533 mg/L to 24,900 mg/L in 2024.

Graph 26. 2024 Monthly BOD_5 Receiving Station Waste Sample Results

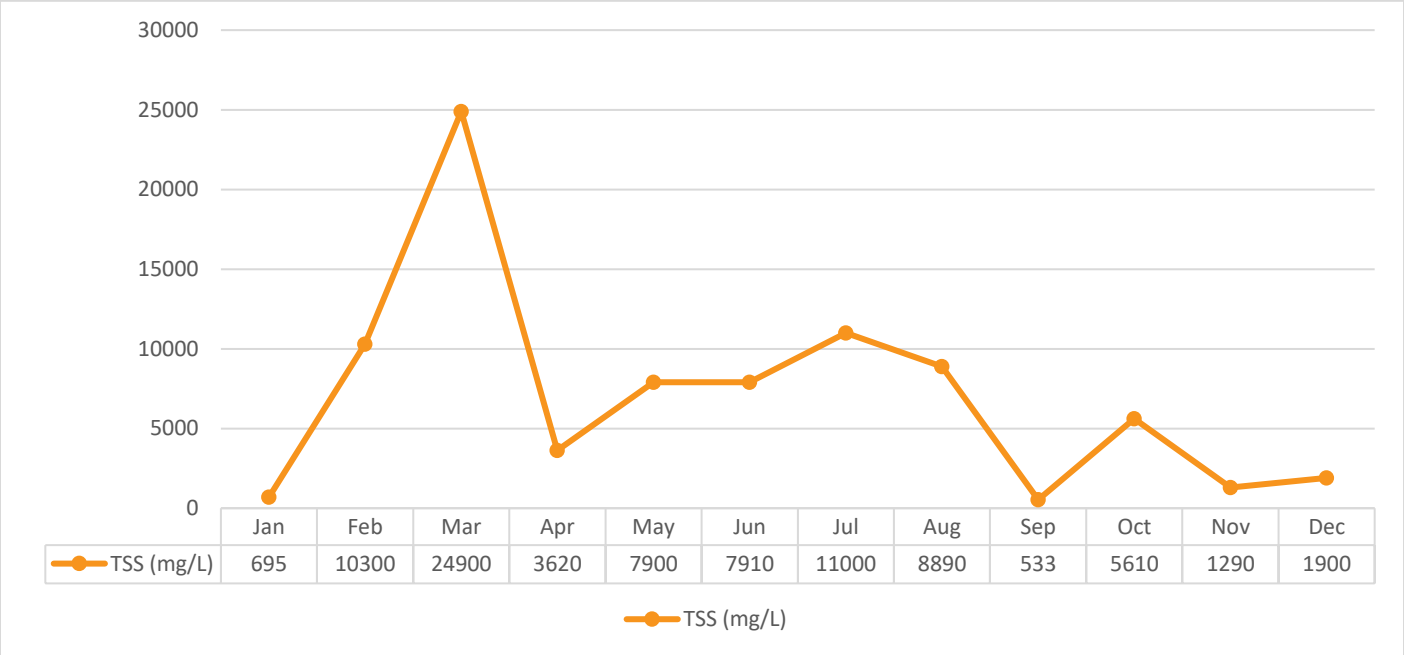


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BOD5 (mg/L)	1250	7810	4270	2160	1620	8480	6730	7800	442	4040	436	569

Total Suspended Solids (TSS)

ECA #1696-BPLL4R requires a grab sample be collected monthly and analyzed for Total Suspended Solids. The Total Suspended Solids sample results ranged from 533 mg/L to 24,900 mg/L in 2024.

Graph 27. 2024 Monthly Total Suspended Solids Receiving Station Waste Sample Results

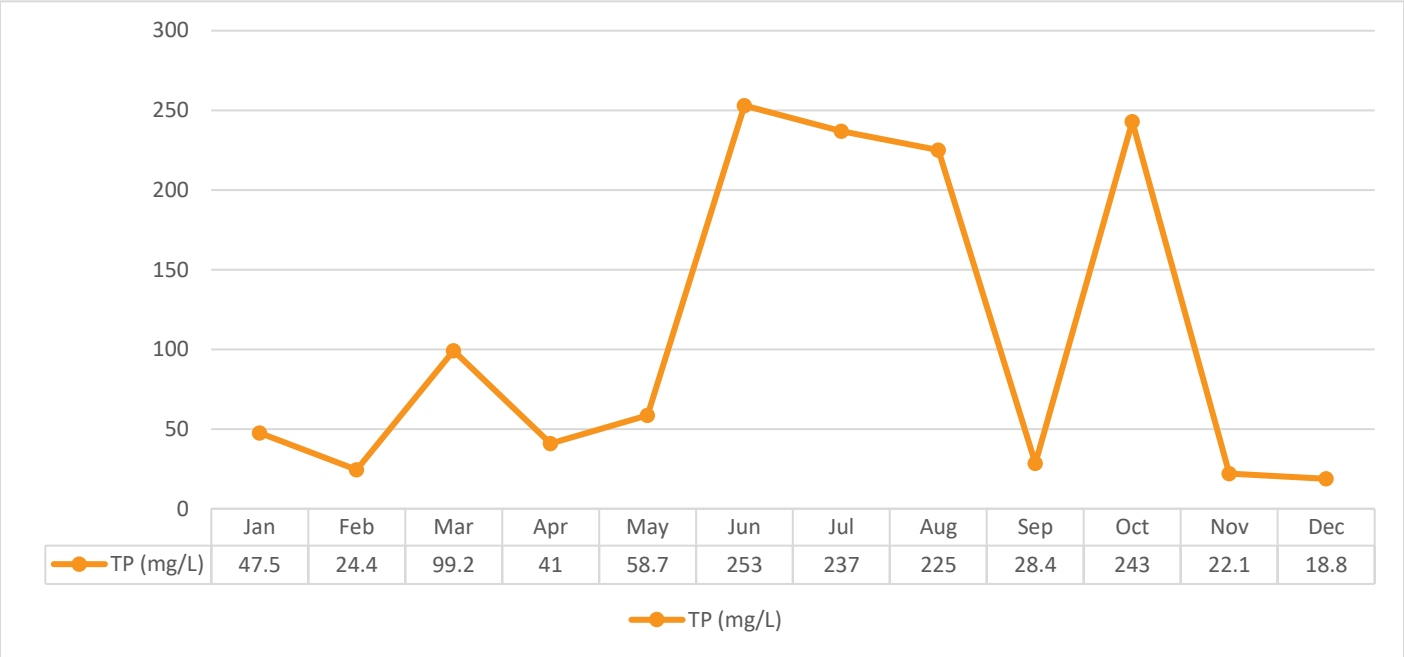


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
TSS (mg/L)	695	10300	24900	3620	7900	7910	11000	8890	533	5610	1290	1900

Total Phosphorus (TP)

ECA #1696-BPLL4R requires one grab sample be collected monthly and analyzed for Total Phosphorus. Results ranged from 18.8 mg/L to 253 mg/L in 2024.

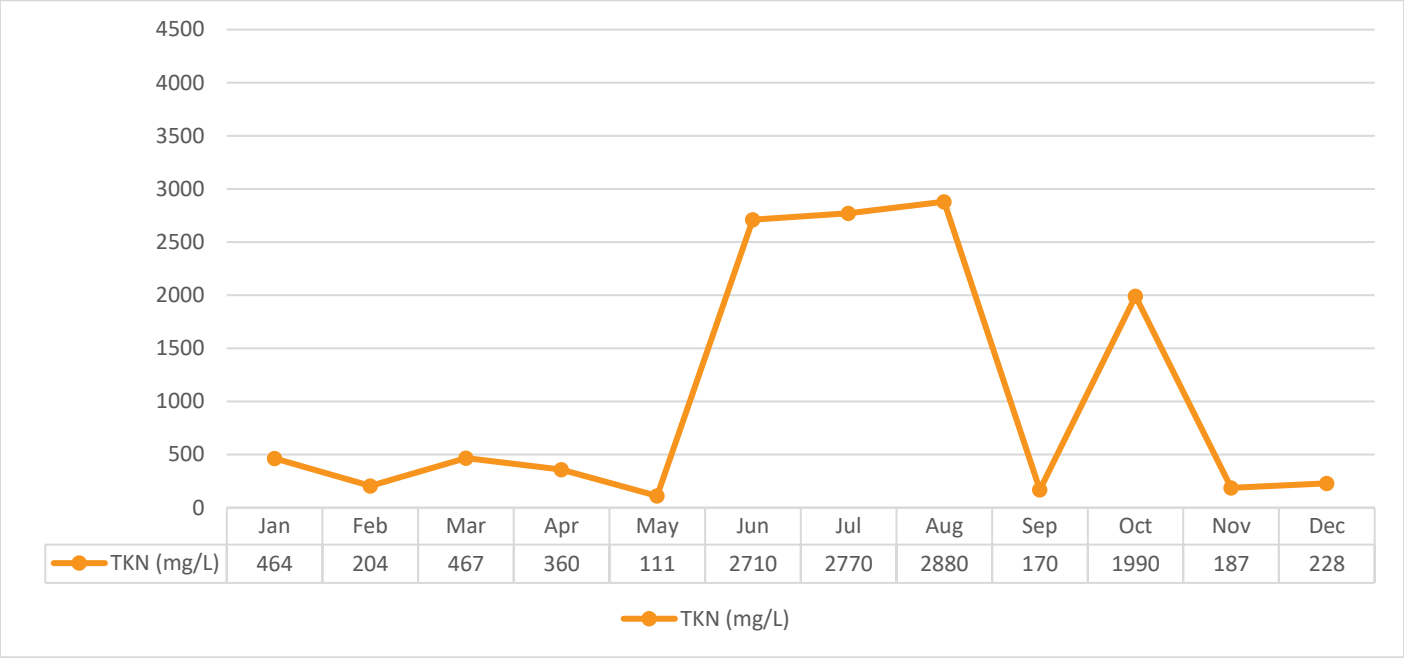
Graph 28. 2024 Monthly Total Phosphorus Receiving Station Waste Sample Results



Total Kjeldahl Nitrogen (TKN)

ECA #1696-BPLL4R requires one grab sample be collected monthly and analyzed for Total Kjeldahl Nitrogen. Monthly Total Kjeldahl Nitrogen results ranged from 111 mg/L to 2,880 mg/L in 2024.

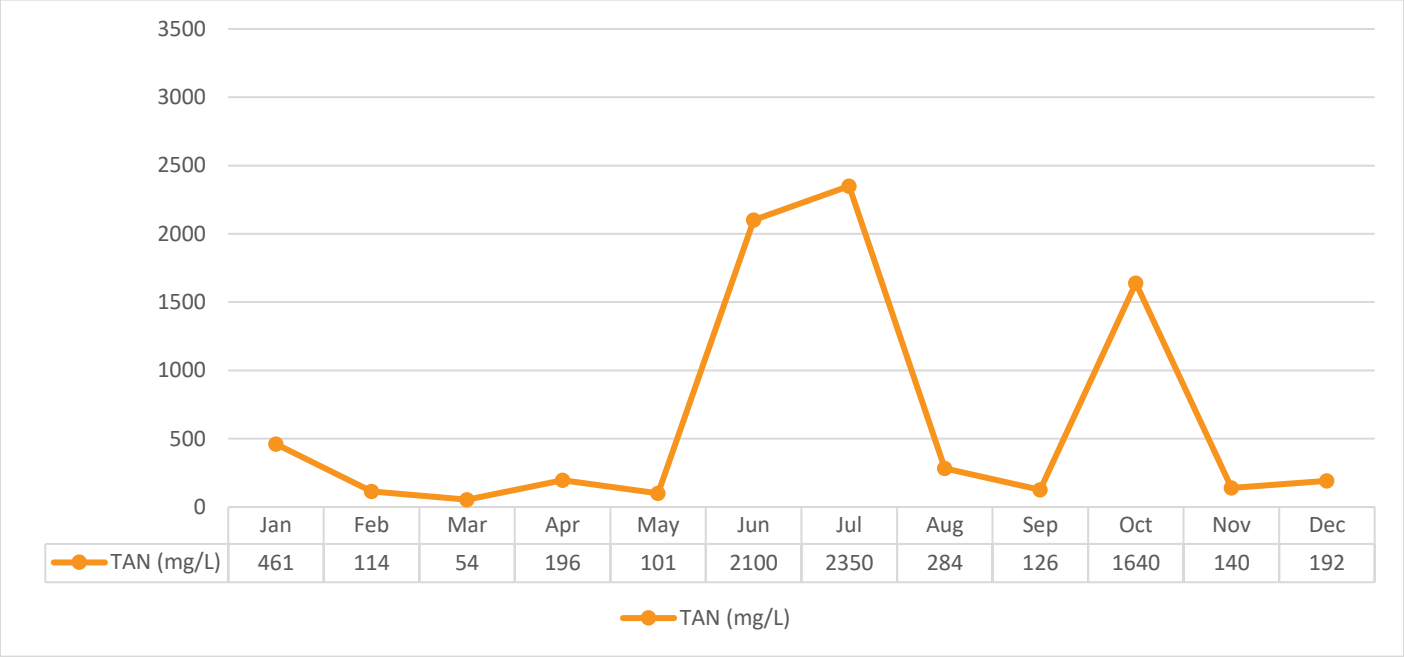
Graph 29. 2024 Monthly Total Kjeldahl Nitrogen Receiving Station Waste Sample Results



Total Ammonia Nitrogen (TAN)

One grab sample was collected from the Receiving Station waste each month in 2024 and analyzed for Total Ammonia Nitrogen. The monthly average concentration results ranged from 54 mg/L to 2,840 mg/L.

Graph 30. 2024 Monthly Total Ammonia Nitrogen Receiving Station Waste Sample Results



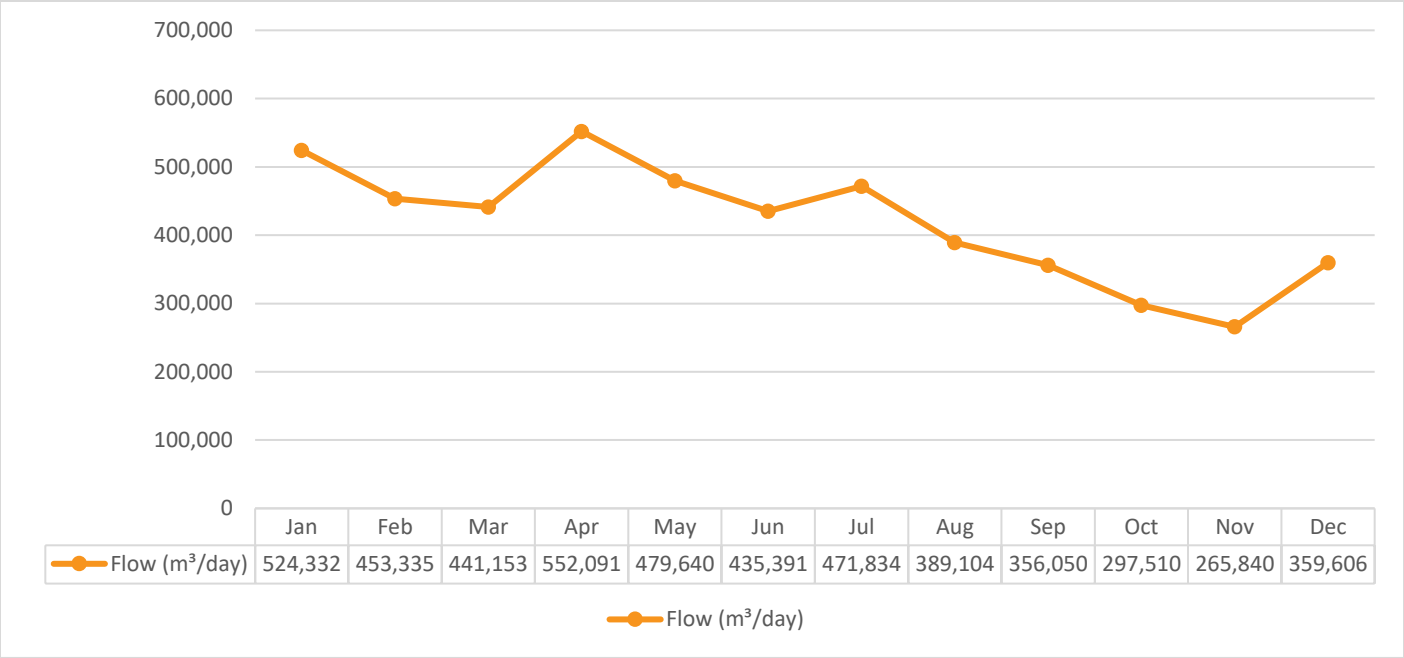
Summary of Final Effluent Monitoring Data to Limits and Objectives

(b) Environmental Compliance Approval (ECA) #1696-BPLL4R requires a summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates, loading and a comparison to the design objectives and compliance limits, including an overview of the success and adequacy of the works be included in the report.

The 2024 Lindsay WWTP annual average daily Effluent flow was 13,738.70 m^3/day and the total Effluent flow in 2024 was 5,025,886 m^3.

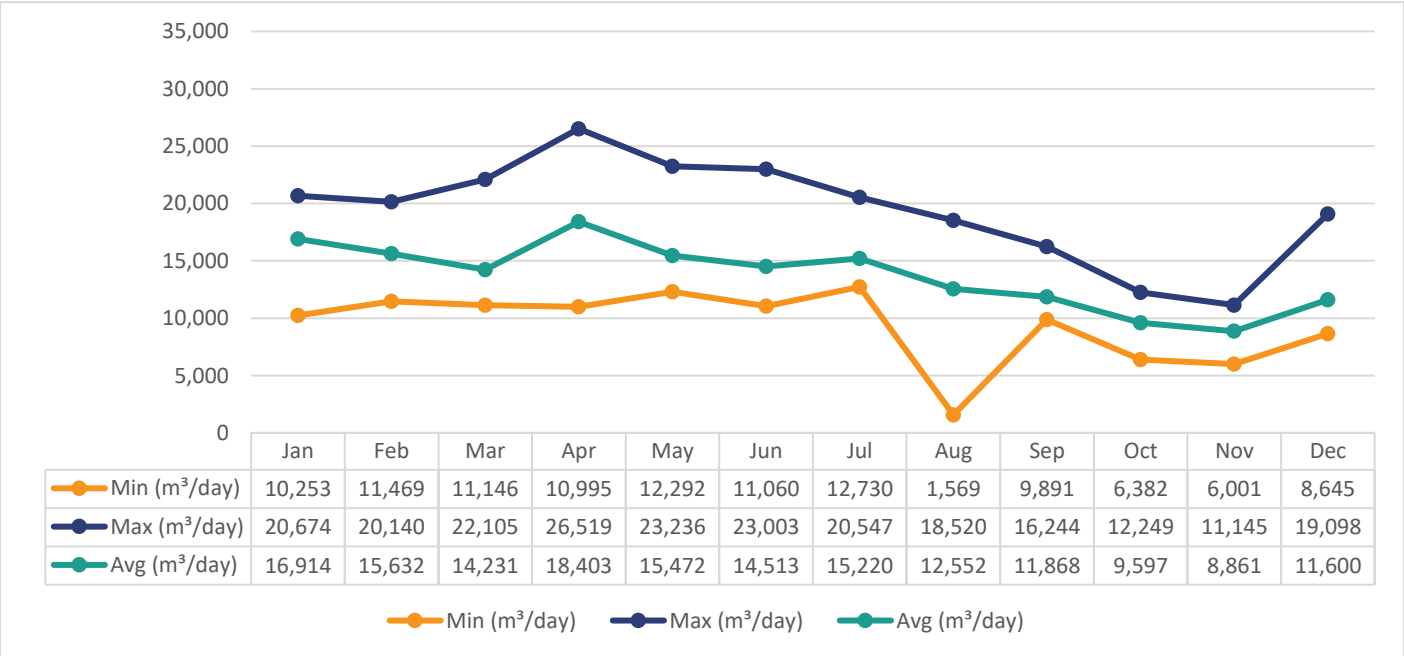
Effluent Flow Monthly Totals

Graph 31. 2024 Final Effluent Monthly Flows



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Flow (m³/day)	524,332	453,335	441,153	552,091	479,640	435,391	471,834	389,104	356,050	297,510	265,840	359,606

Graph 32. 2024 Final Effluent Daily Minimum, Maximum and Average Flows



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Min (m³/day)	10,253	11,469	11,146	10,995	12,292	11,060	12,730	1,569	9,891	6,382	6,001	8,645
Max (m³/day)	20,674	20,140	22,105	26,519	23,236	23,003	20,547	18,520	16,244	12,249	11,145	19,098
Avg (m³/day)	16,914	15,632	14,231	18,403	15,472	14,513	15,220	12,552	11,868	9,597	8,861	11,600

Note: See **Table 8: 2024 Lindsay WWTP Operational Challenges** for information when final effluent totalized daily flow exceeded the limit set out in ECA #1696-BPLL4R

Final Effluent Lab Results

With the substantial completion of Phase 1 Upgrade and Expansion project at the Lindsay WWTP, new limits as outlined in ECA #1696-BPLL4R Schedule B and C came into effect. This resulted in changes to Final Effluent parameters design objectives listed in Schedule B, and compliance limits for the Final Effluent parameters listed in the table(s) included in Schedule C. These changes came into effect February 1, 2023.

Table 2. $CBOD_5$ Objective and Limits

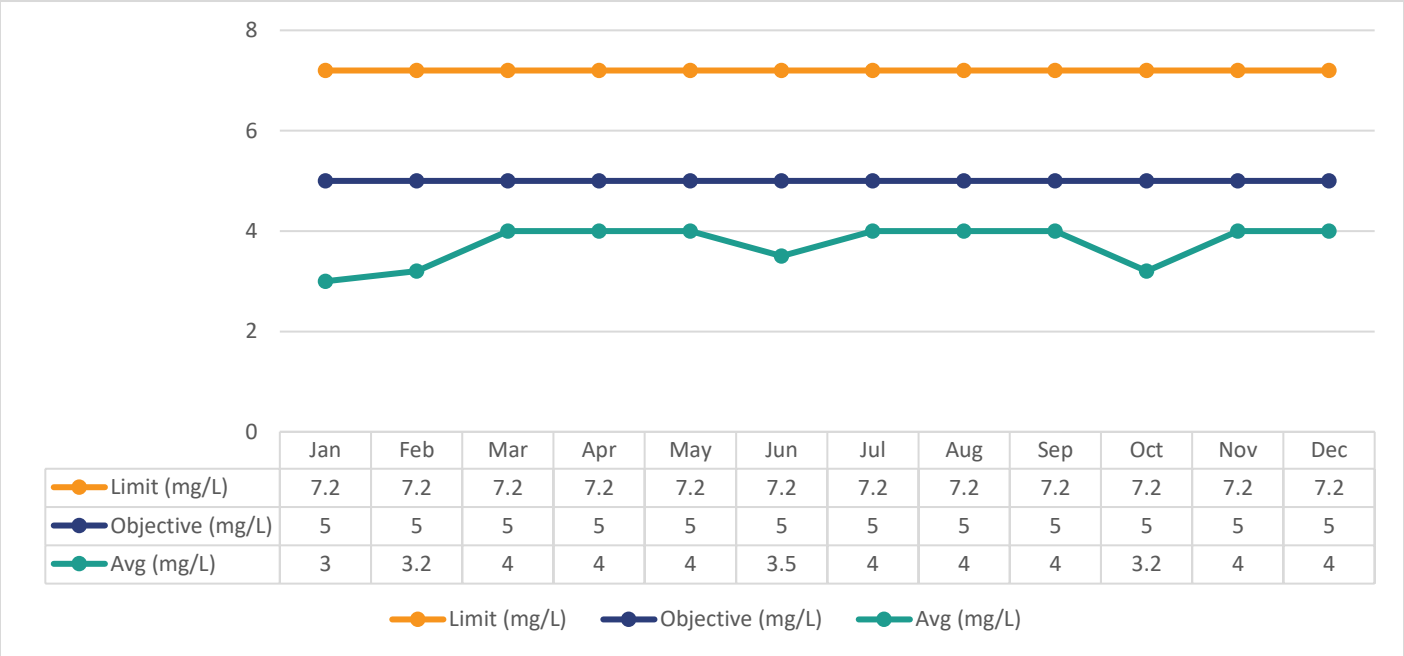
Current	Objective (mg/L)	5.0
	Limit (mg/L)	7.2
	Loading Limit (kg/d)	176.4

Note: The objective, limit and loading limit is a monthly average.

The monthly average concentration results ranged from 3.0 mg/L to 4.0 mg/L in 2024.

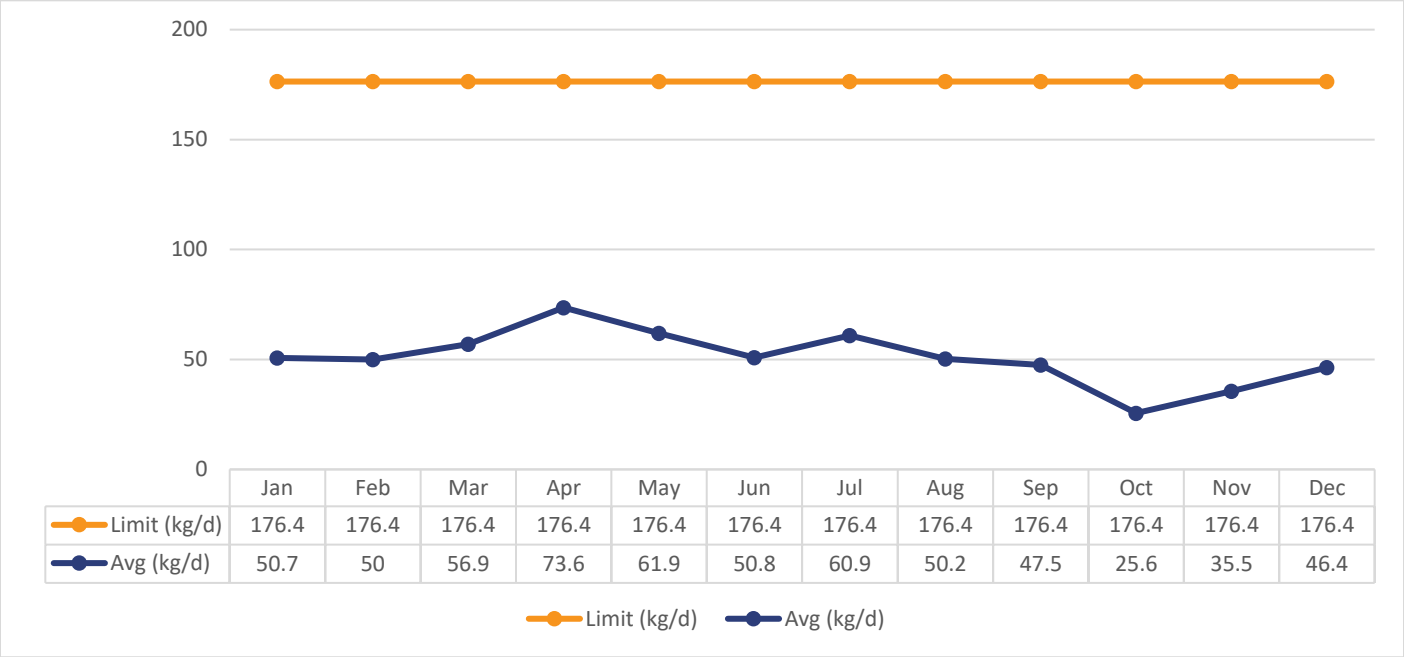
The monthly $CBOD_5$ average concentration results and monthly average waste loading throughout 2024 were in compliance with the limits outlined in the ECA.

Graph 33. 2024 Monthly Final Effluent $CBOD_5$ Concentration Comparisons



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit (mg/L)	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
Objective (mg/L)	5	5	5	5	5	5	5	5	5	5	5	5
Avg (mg/L)	3	3.2	4	4	4	3.5	4	4	4	3.2	4	4

Graph 34. 2024 Monthly Final Effluent $CBOD_5$ Average Waste Loading Comparisons



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit (kg/d)	176.4	176.4	176.4	176.4	176.4	176.4	176.4	176.4	176.4	176.4	176.4	176.4
Avg (kg/d)	50.7	50	56.9	73.6	61.9	50.8	60.9	50.2	47.5	25.6	35.5	46.4

Total Suspended Solids (TSS)

The table below outlines the TSS design objectives and compliance limits set in the ECA #1696-BPLL4R.

Table 3. Total Suspended Solids Objective and Limits

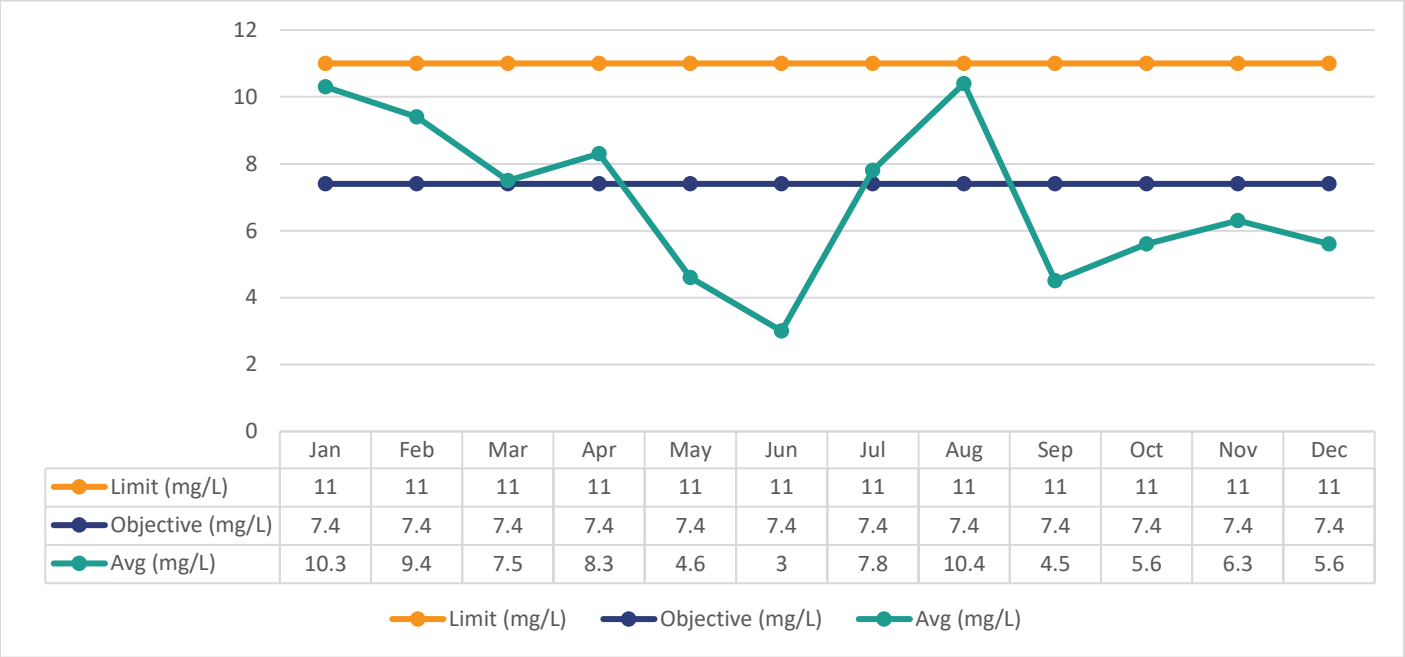
Current	Objective (mg/L)	7.4
	Limit (mg/L)	11.0
	Loading Limit (kg/d)	238.0

Note: The objective, limit and loading limit is a monthly average.

The monthly average concentration results ranged from 3.0 mg/L to 10.4 mg/L in 2024.

The monthly average waste loading concentration results ranged from 43.5 kg/day to 146.9 kg/day.

Graph 35. 2024 Monthly Final Effluent TSS Concentration Comparisons



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit (mg/L)	11	11	11	11	11	11	11	11	11	11	11	11
Objective (mg/L)	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Avg (mg/L)	10.3	9.4	7.5	8.3	4.6	3	7.8	10.4	4.5	5.6	6.3	5.6

There were several months in 2024 when the objective for TSS were not met as shown in Graph 35. Throughout 2024, the Total Suspended Solids monthly removal rates ranged from 89.46% to 98.55%.

Graph 36. 2024 Monthly Final Effluent TSS Average Waste Loading Comparisons



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit (kg/d)	238	238	238	238	238	238	238	238	238	238	238	238
Avg (kg/d)	50.7	146.9	106.7	151.8	71.2	43.5	118	130.5	53.4	76.8	55.4	63.8

Total (Ammonia+Ammonium) Nitrogen (TAN)

The table below outlines the TAN design objectives and compliance limits set in the ECA #1696-BPLL4R.

Table 4. Total Ammonia Nitrogen Objective and Limits

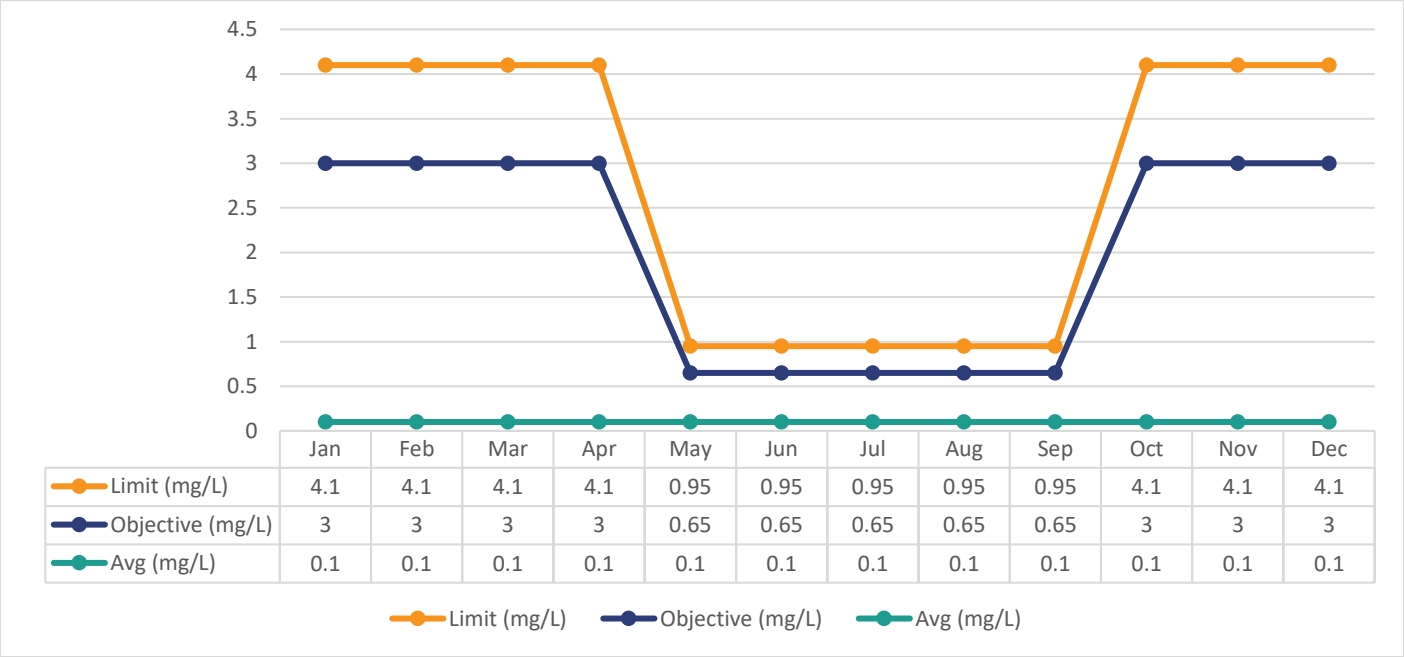
Current	May – Sept 30 Objective (mg/L)	0.65
	Oct 1 – Apr 30 Objective (mg/L)	3.0
	May 1 – Sept 30 Limit (mg/L)	0.95
	Oct 1 – Apr 30 Limit (mg/L)	4.1
	May 1 – Sept 30 Loading Limit (kg/d)	23.4
	Oct 1 – Apr 30 Loading Limit (kg/d)	99.5

Note: The objective, limit and loading limit is a monthly average.

The Lindsay WWTP has seen steady results very often receiving individual results less than the laboratory method detection limit of 0.1 mg/L throughout 2024.

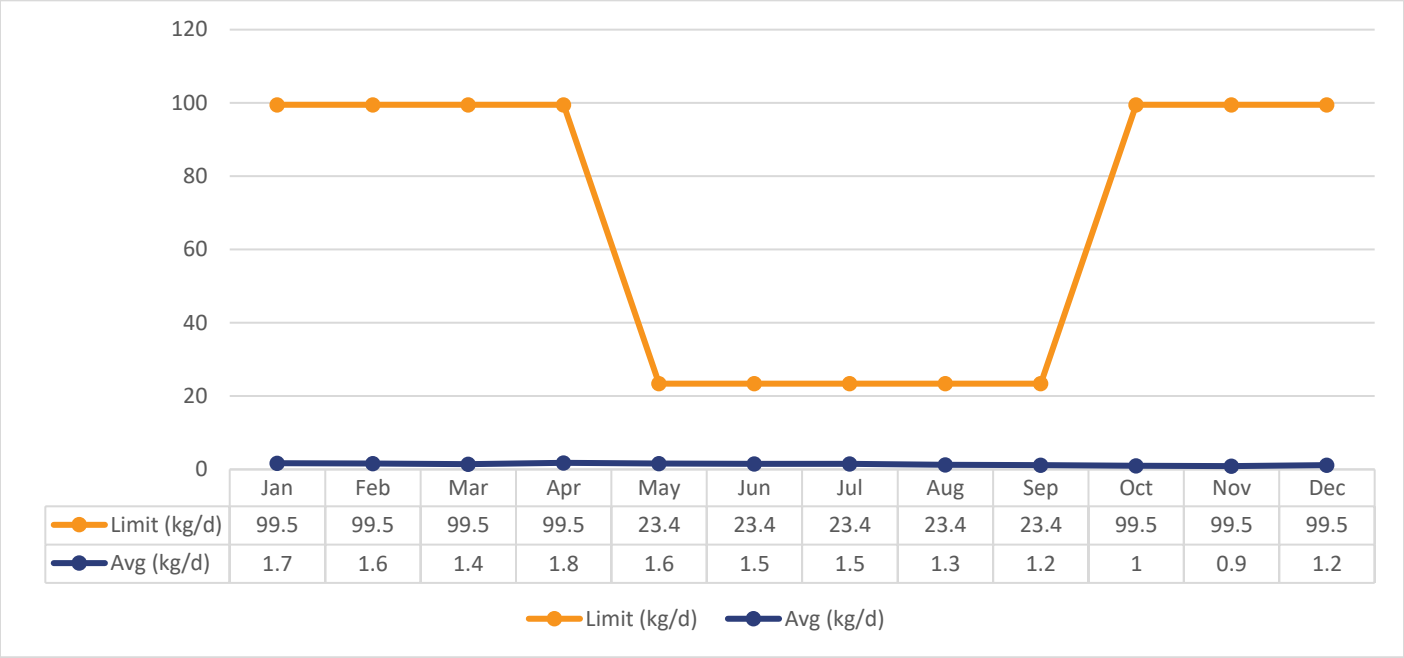
The monthly Total (Ammonia + Ammonium) Nitrogen average concentration results and monthly average waste loading results throughout 2024 were in compliance with the limits outlined in the ECA.

Graph 37. 2024 Monthly Final Effluent TAN Concentration Comparisons



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit (mg/L)	4.1	4.1	4.1	4.1	0.95	0.95	0.95	0.95	0.95	4.1	4.1	4.1
Objective (mg/L)	3	3	3	3	0.65	0.65	0.65	0.65	0.65	3	3	3
Avg (mg/L)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Graph 38. 2024 Monthly Final Effluent TAN Average Waste Loading Comparisons



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit (kg/d)	99.5	99.5	99.5	99.5	23.4	23.4	23.4	23.4	23.4	99.5	99.5	99.5
Avg (kg/d)	1.7	1.6	1.4	1.8	1.6	1.5	1.5	1.3	1.2	1	0.9	1.2

Total Phosphorus (TP)

The table below outlines the Total Phosphorus design objectives and compliance limits set in ECA #1696-BPLL4R.

Table 5. Total Phosphorus Objective and Limits

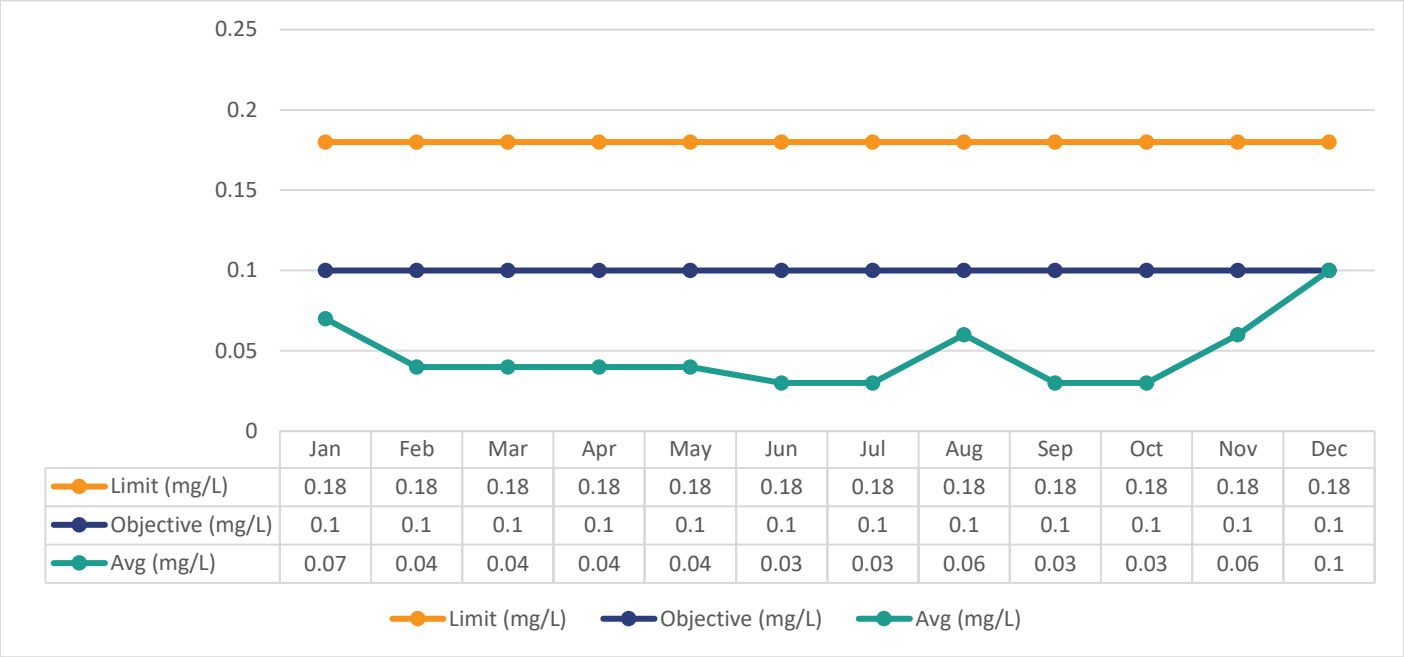
Current	Objective (mg/L)	<0.1
	Limit (mg/L)	0.18
	Loading Limit (kg/d)	4.3

Note: The objective, limit and loading limit is a monthly average.

The monthly Total Phosphorus average concentration results throughout 2024 were less than the concentration objectives.

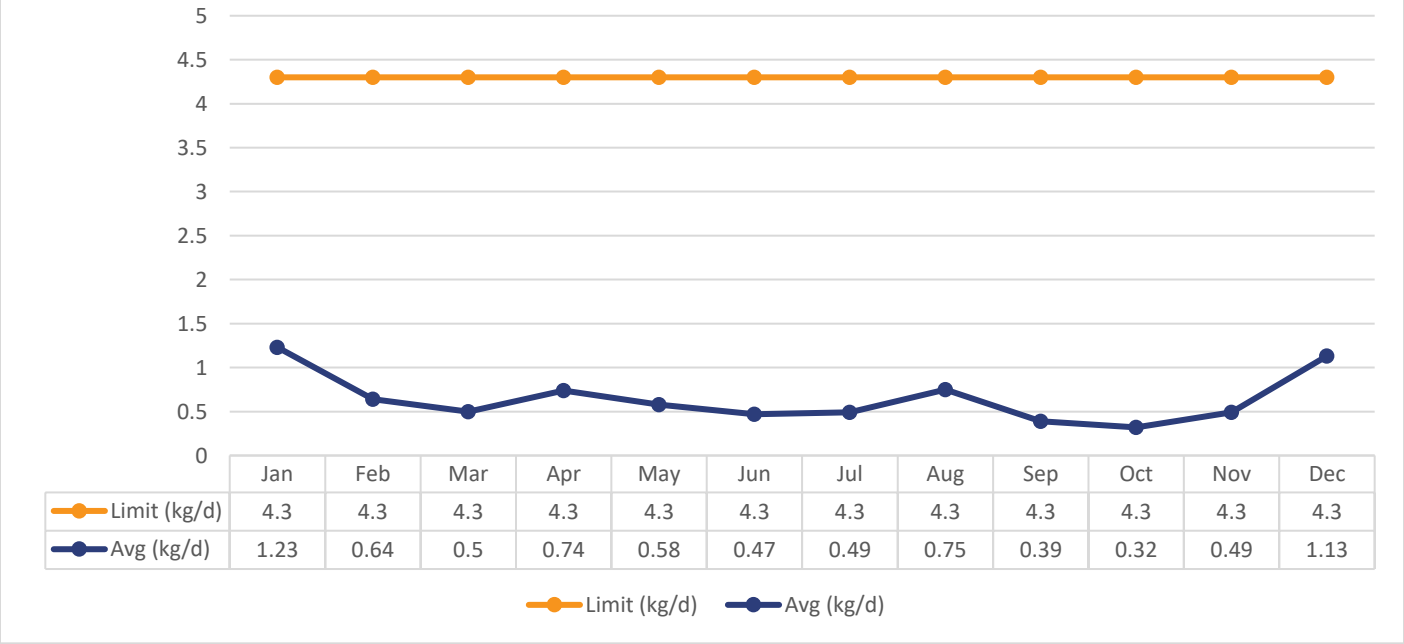
The monthly Total Phosphorus average concentration limits and monthly average waste loading limits throughout 2024 were in compliance with the limits outlined in the ECA.

Graph 39. 2024 Monthly Final Effluent Total Phosphorus Concentration Comparisons



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit (mg/L)	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Objective (mg/L)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Avg (mg/L)	0.07	0.04	0.04	0.04	0.04	0.03	0.03	0.06	0.03	0.03	0.06	0.1

Graph 40. 2024 Monthly Final Effluent Total Phosphorus Average Waste Loading Comparisons



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit (kg/d)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Avg (kg/d)	1.23	0.64	0.5	0.74	0.58	0.47	0.49	0.75	0.39	0.32	0.49	1.13

E. coli

The table below outlines the E. coli design objectives and compliance limits set in ECA #1696-BPLL4R.

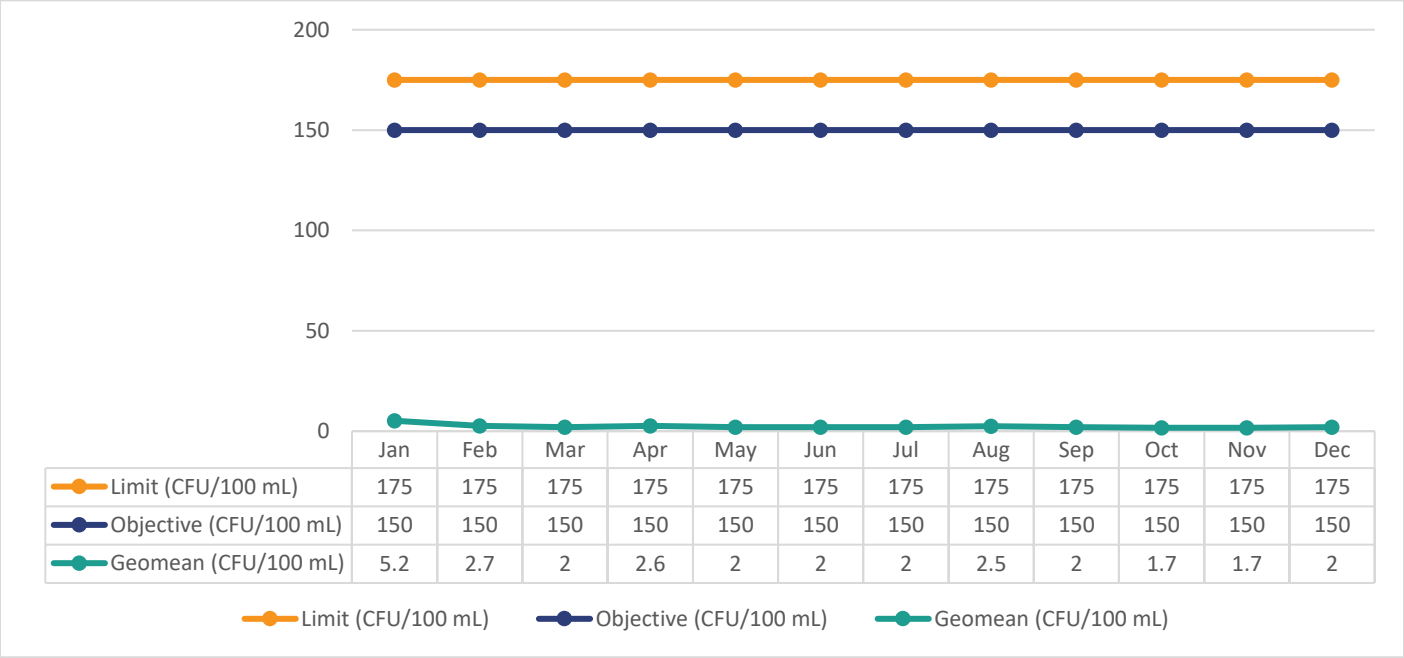
Table 6. E. coli Objective and Limits

Current	Objective (CFU/mL)	150 Monthly GMD*
	Limit (CFU/mL)	175 Monthly GMD*

*Geometric Mean Density

The final effluent results were less than the E. coli monthly geometric mean density limit and objective throughout 2024.

Graph 41. 2024 Monthly Final Effluent E. coli Concentration Comparisons



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit (CFU/100 mL)	175	175	175	175	175	175	175	175	175	175	175	175
Objective (CFU/100 mL)	150	150	150	150	150	150	150	150	150	150	150	150
Geomean (CFU/100 mL)	5.2	2.7	2	2.6	2	2	2	2.5	2	1.7	1.7	2

Acute Lethality to Rainbow Trout and Daphnia Magna

Quarterly effluent samples were collected on January 4, April 4, July 4 and October 3 2024 for analysis for acute lethality to rainbow trout and daphnia magna.

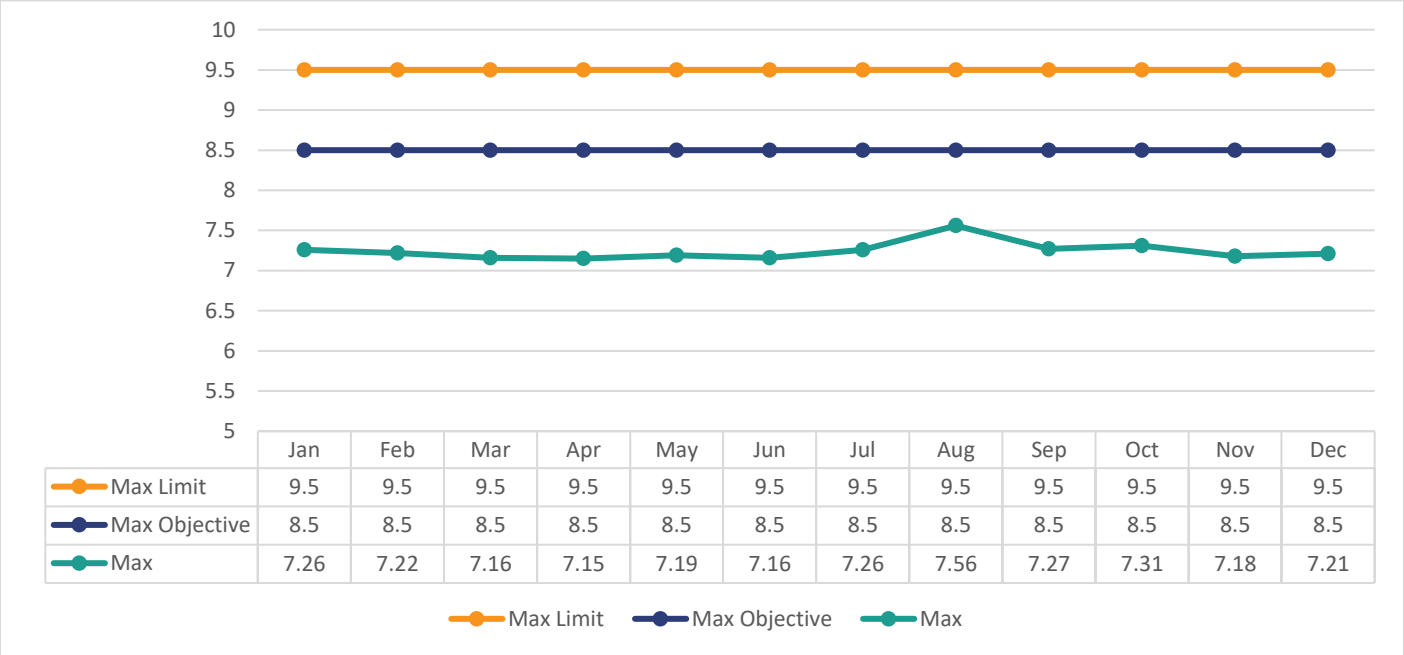
All of the 2024 samples resulted in a 0% mortality rate for Rainbow Trout. The October 3 sample resulted in a mean mortality of 6.7% and January 4 sample resulted in a mean mortality and immobility of 3.3% to Daphnia Magna only. A summary of the results are provided in **Appendix I: Acute Lethality Analysis Results**.

pH

ECA #1696-BPLL4R set a pH compliance limit within the range of 6.0 to 9.5, inclusive, at all times on the effluent. Every pH reading in 2024 was within the compliance limits set by the ECA.

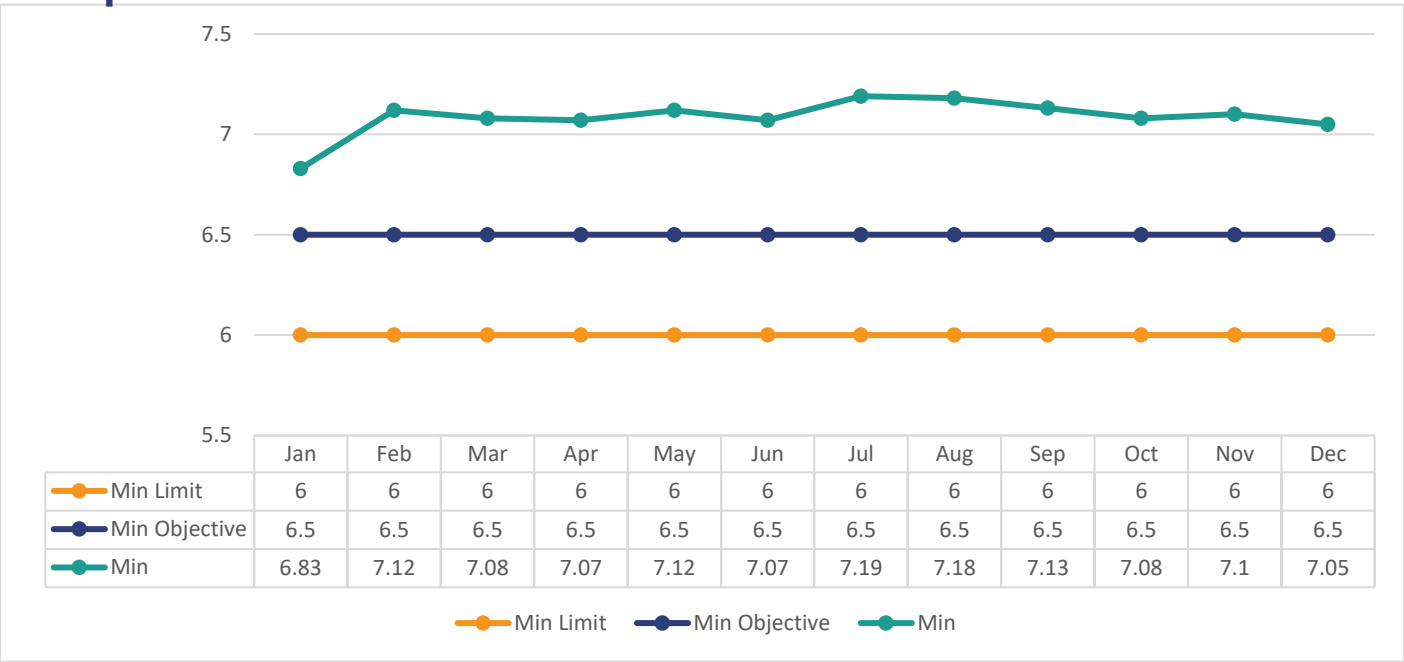
ECA #1696-BPLL4R set the pH objective of each single sample result between 6.5 and 8.5, inclusive, at all times on the effluent. Every pH reading in 2024 was within the compliance objectives set by the ECA.

Graph 42. 2024 Monthly Final Effluent Maximum pH Concentration Comparisons



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Limit	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
Max Objective	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Max	7.26	7.22	7.16	7.15	7.19	7.16	7.26	7.56	7.27	7.31	7.18	7.21

Graph 43. 2024 Monthly Final Effluent Minimum pH Concentration Comparisons

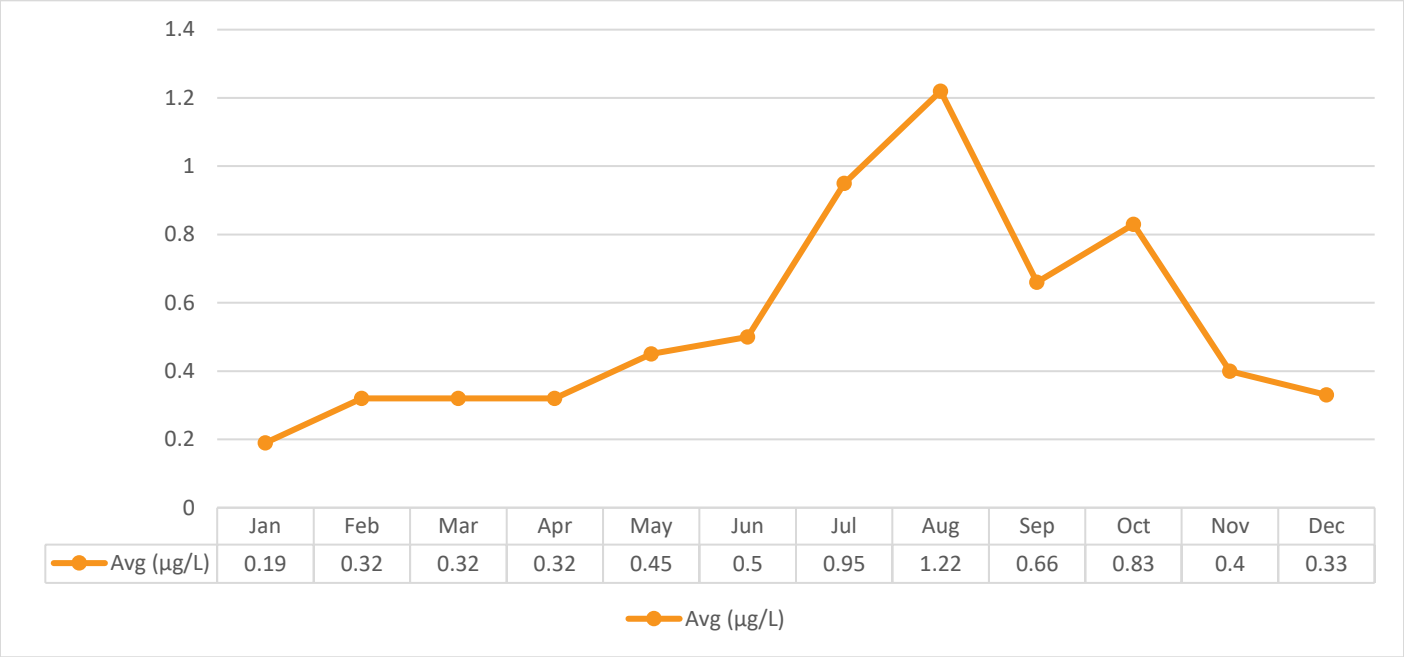


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Min Limit	6	6	6	6	6	6	6	6	6	6	6	6
Min Objective	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Min	6.83	7.12	7.08	7.07	7.12	7.07	7.19	7.18	7.13	7.08	7.1	7.05

Unionized Ammonia

Unionized Ammonia is calculated monthly based on the final effluent Total Ammonia Nitrogen results and the field pH and Temperature collected at the same time as the TAN sample. The average monthly results ranged between 0.19 µg/L and 1.22 µg/L. ECA #1696-BPLL4R does not set an Unionized Ammonia limit or objective.

Graph 44. 2024 Monthly Final Effluent Unionized Ammonia Average Concentration



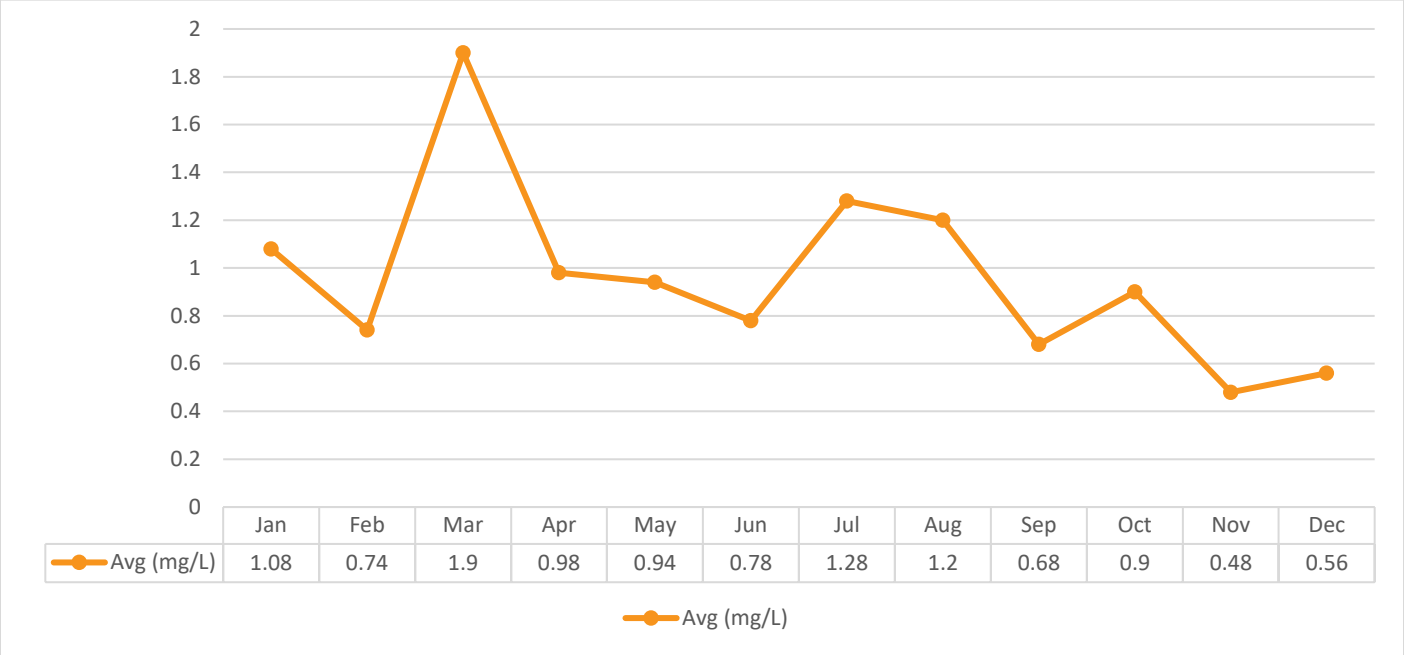
Additional Parameters

The following parameters are requirements of ECA #1696-BPLL4R, but are not designated average concentration limits or average waste loading limits.

Total Kjeldahl Nitrogen (TKN)

Total Kjeldahl Nitrogen is sampled weekly and the average monthly results ranged between 0.62 mg/L and 1.70 mg/L in 2024.

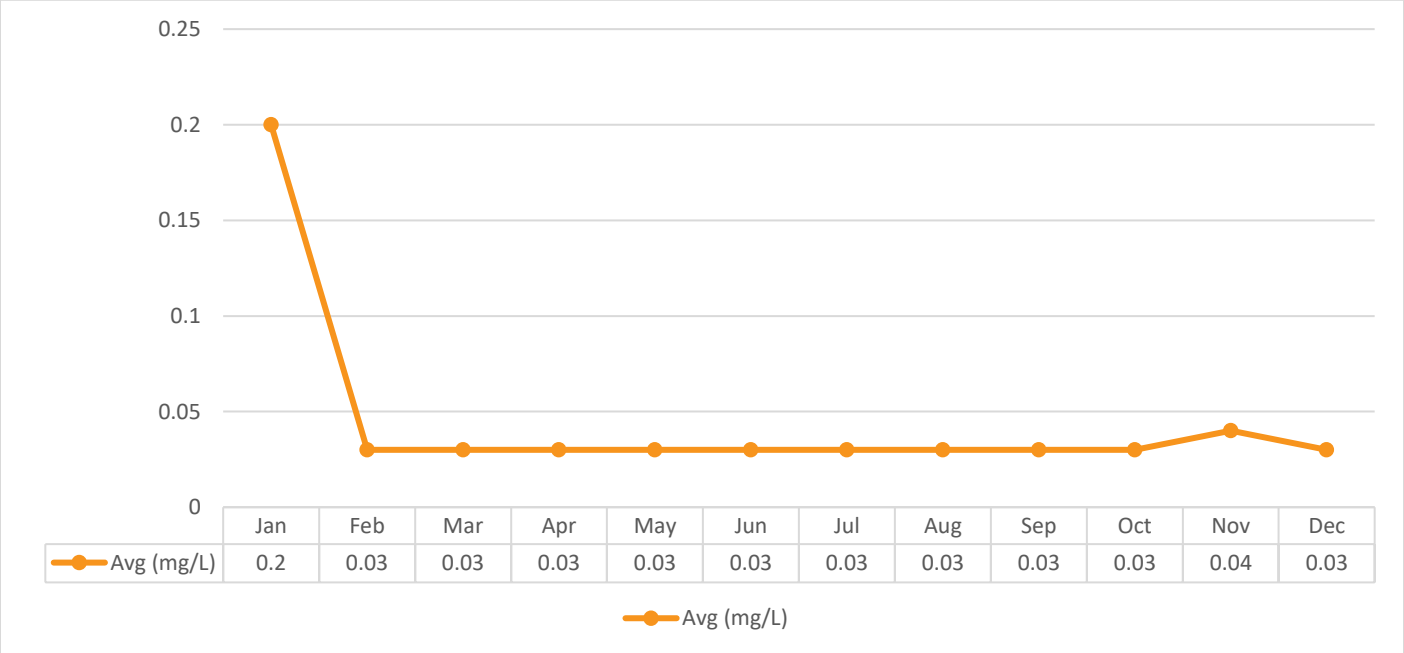
Graph 45. 2024 Monthly Final Effluent TKN Average Concentration



Nitrite as Nitrogen

Nitrite is sampled weekly and the average monthly results ranged between the laboratory method detection limit of <0.03 mg/L and 0.20 mg/L in 2024.

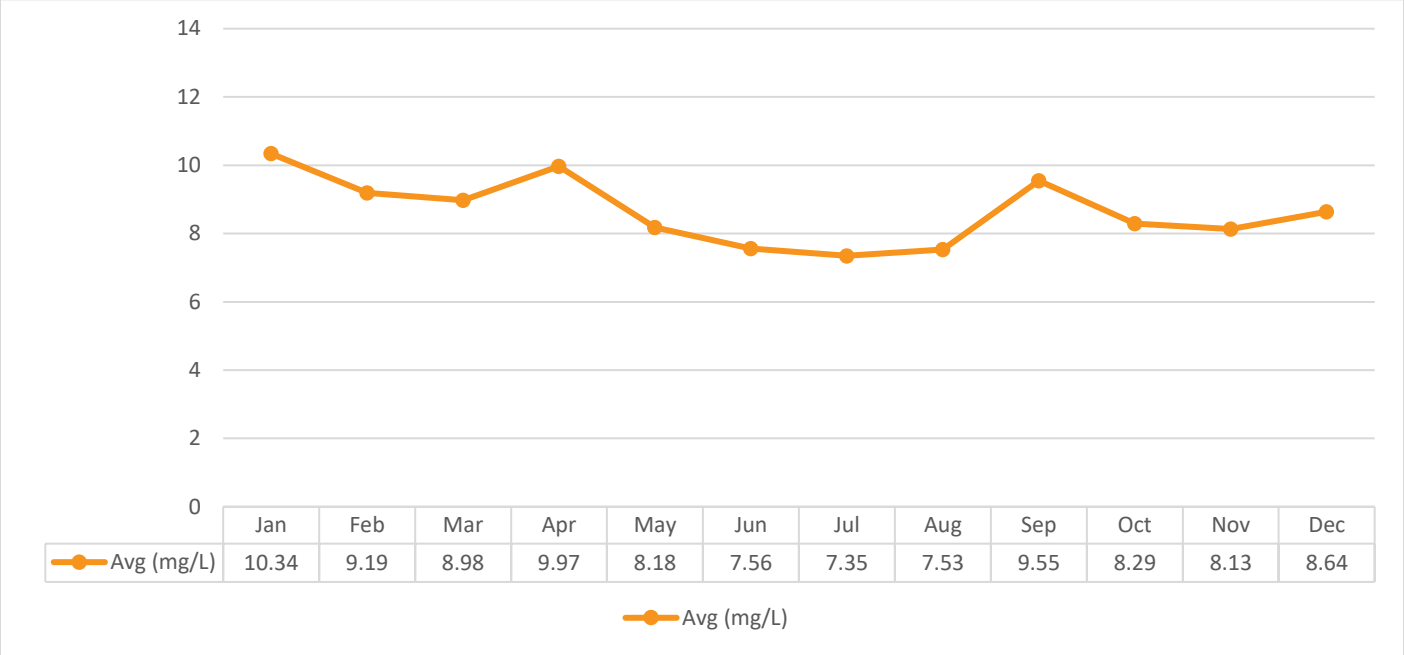
Graph 46. 2024 Monthly Final Effluent Nitrite Average Concentration



Nitrate as Nitrogen

Nitrate is sampled weekly and the average monthly results ranged between 7.35 mg/L and 10.34 mg/L in 2024.

Graph 47. 2024 Monthly Final Effluent Nitrate Average Concentration

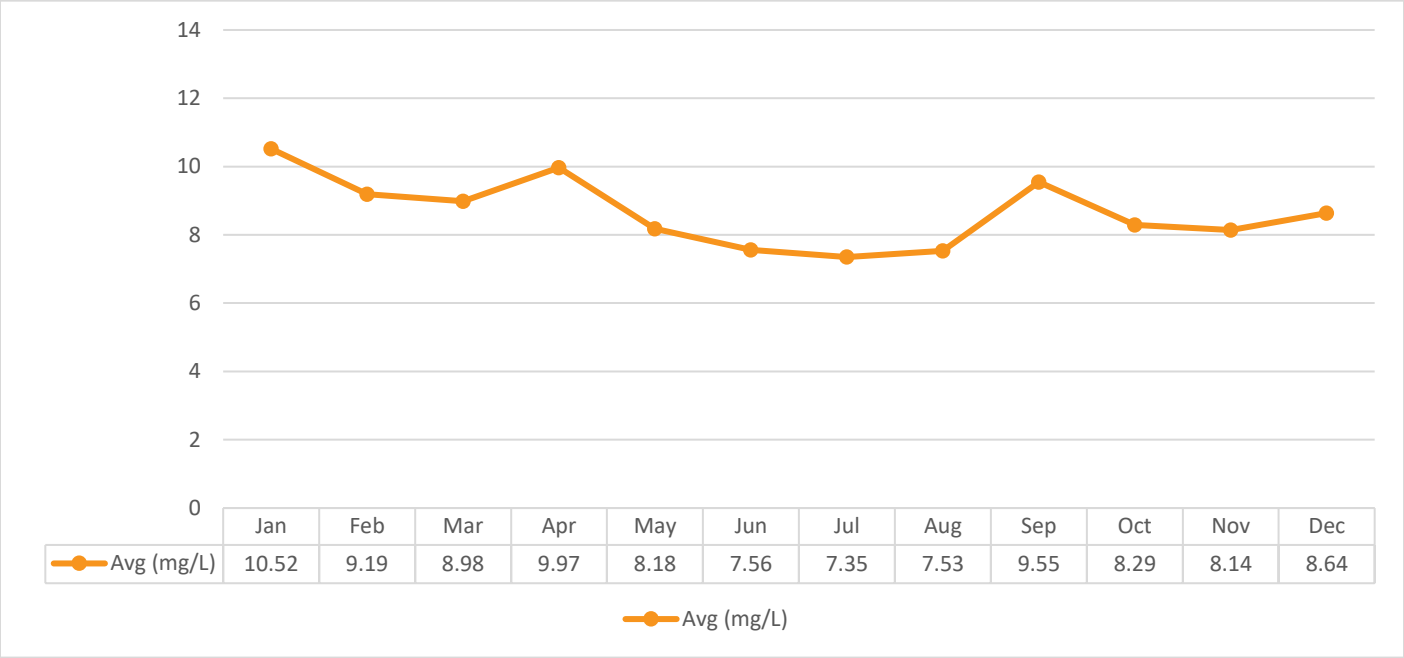


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg (mg/L)	10.34	9.19	8.98	9.97	8.18	7.56	7.35	7.53	9.55	8.29	8.13	8.64

Nitrite + Nitrate as Nitrogen

Nitrite + Nitrate is sampled weekly and the average monthly results ranged between 7.35 mg/L and 10.52 mg/L in 2024.

Graph 48. 2024 Monthly Final Effluent Nitrite + Nitrate Average Concentration



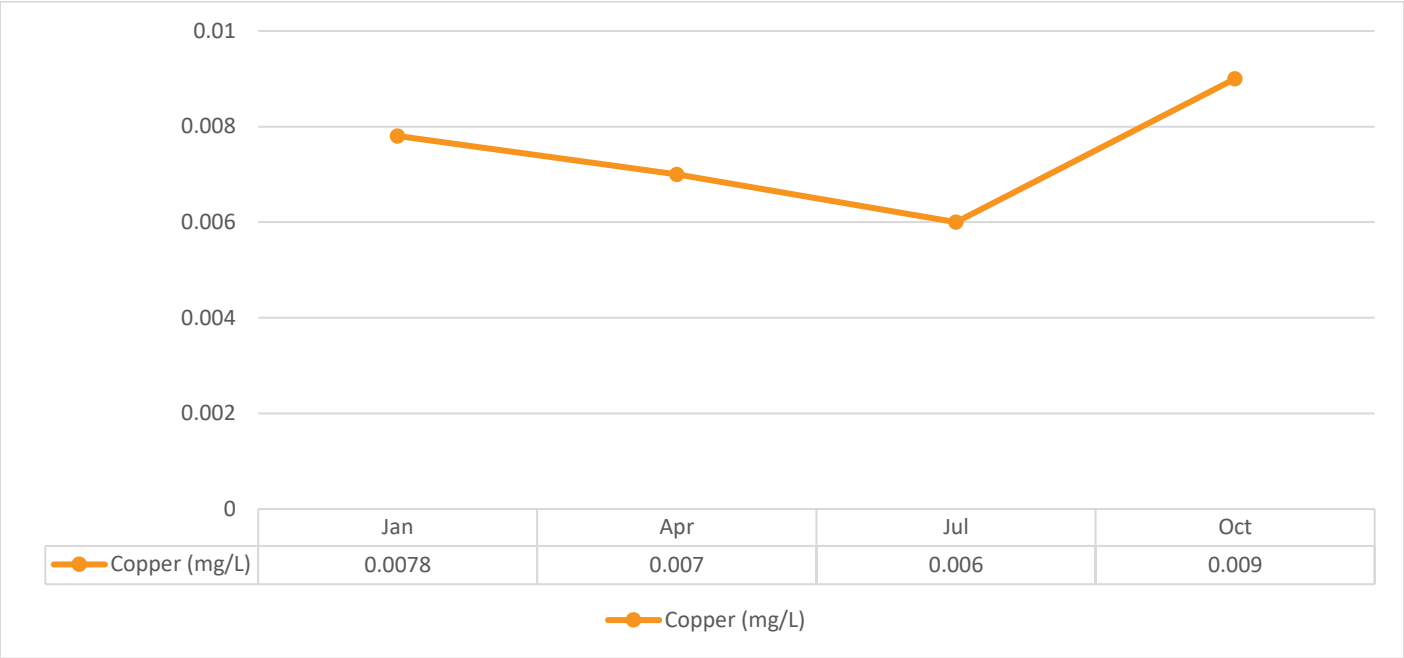
Final Effluent Samples Used for Leachate Related Monitoring

Samples are collected of the Final Effluent quarterly for the purpose of Leachate related monitoring for the Lindsay Ops Landfill as a requirement of ECA #1696-BPLL4R.

Copper

Copper was sampled quarterly in 2024 and the results ranged between 0.006 mg/L and 0.0090 mg/L.

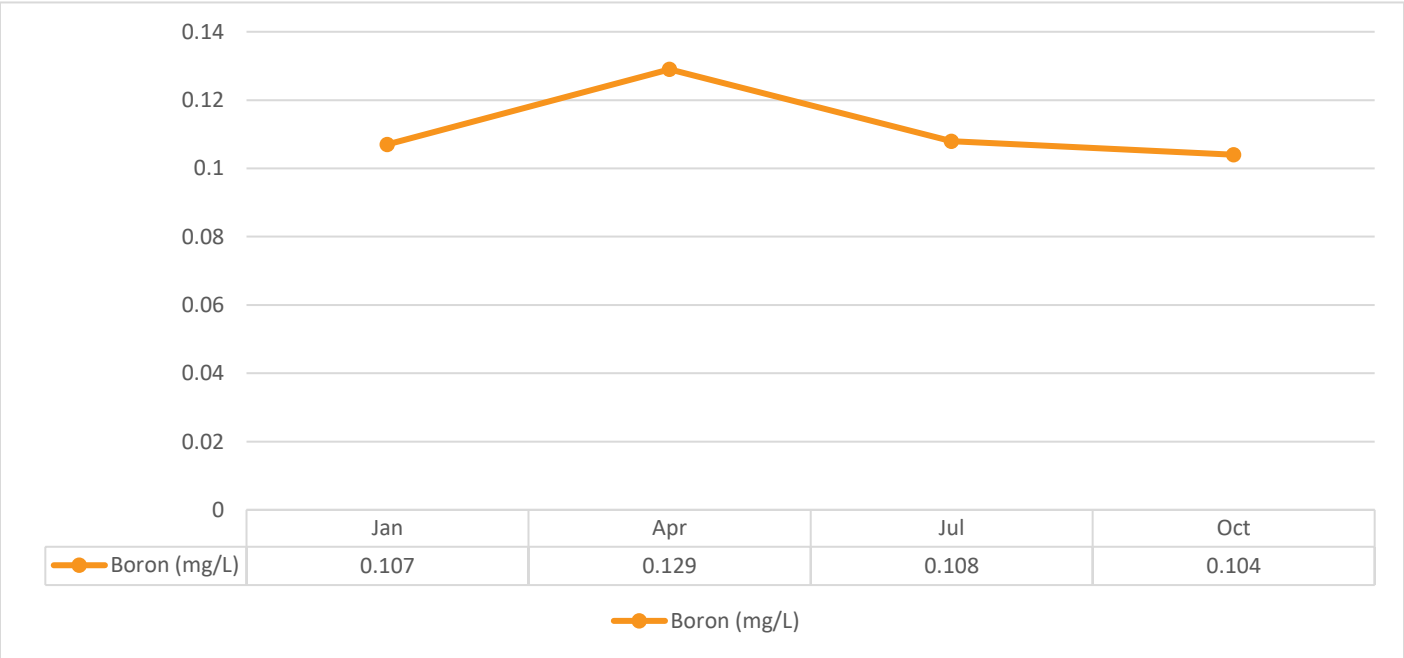
Graph 49. 2024 Final Effluent Copper Concentration



Boron

Boron was sampled quarterly in 2024 and the results ranged between 0.104 mg/L and 0.129 mg/L.

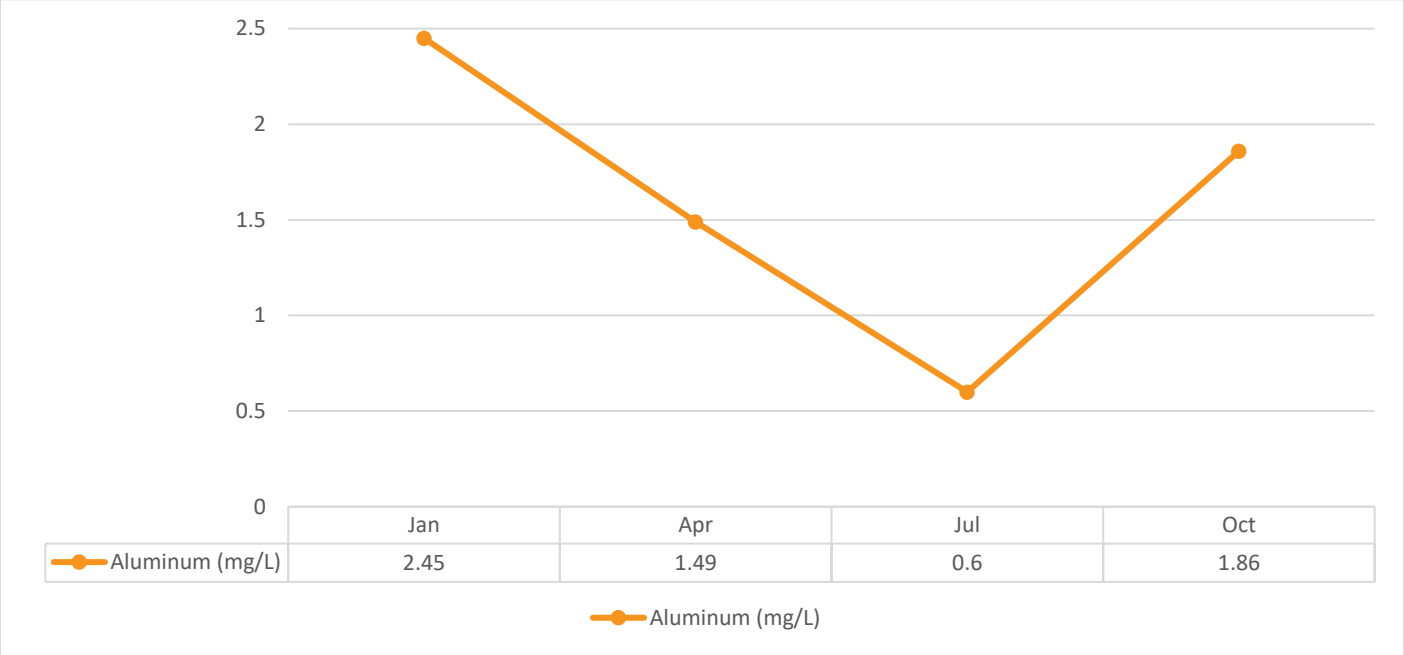
Graph 50. 2024 Final Effluent Boron Concentration



Aluminum (Total)

Aluminum was sampled quarterly in 2024 and the results ranged between 0.595 mg/L and 2.45 mg/L.

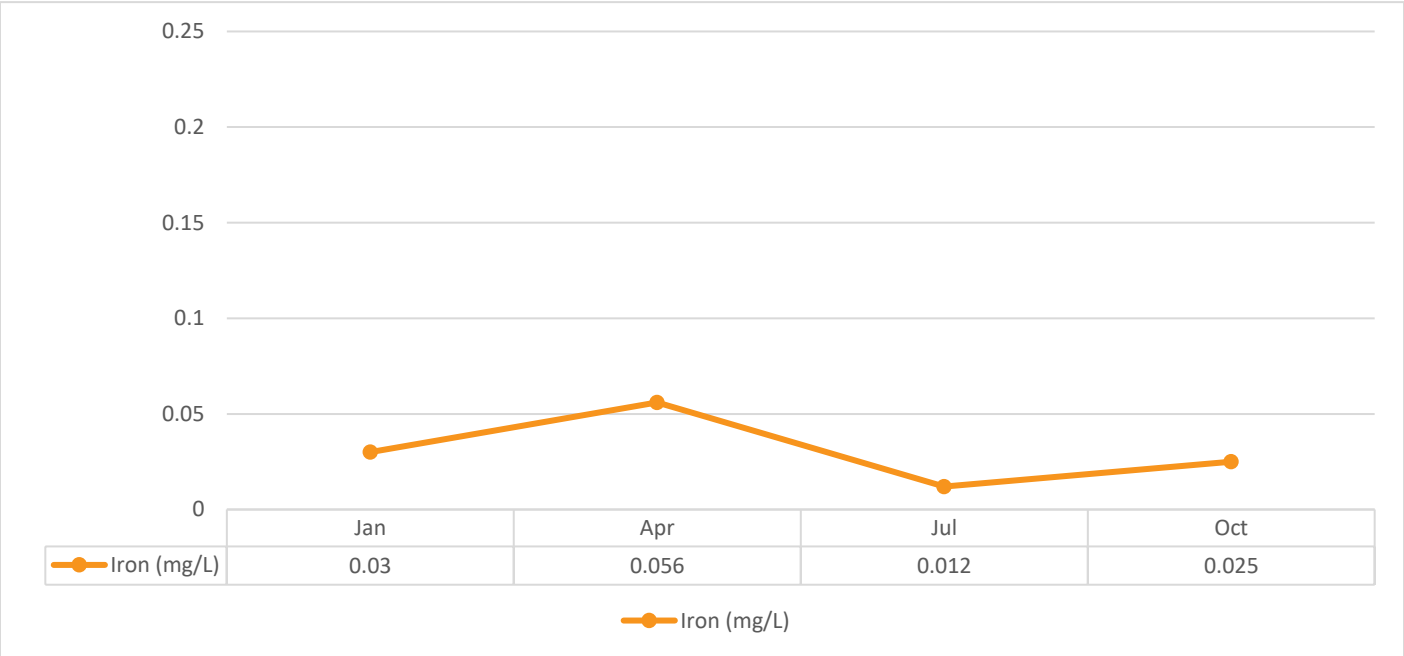
Graph 51. 2024 Final Effluent Aluminum Concentration



Iron (Total)

Iron was sampled quarterly in 2024 and the results ranged between 0.012 mg/L and 0.56 mg/L.

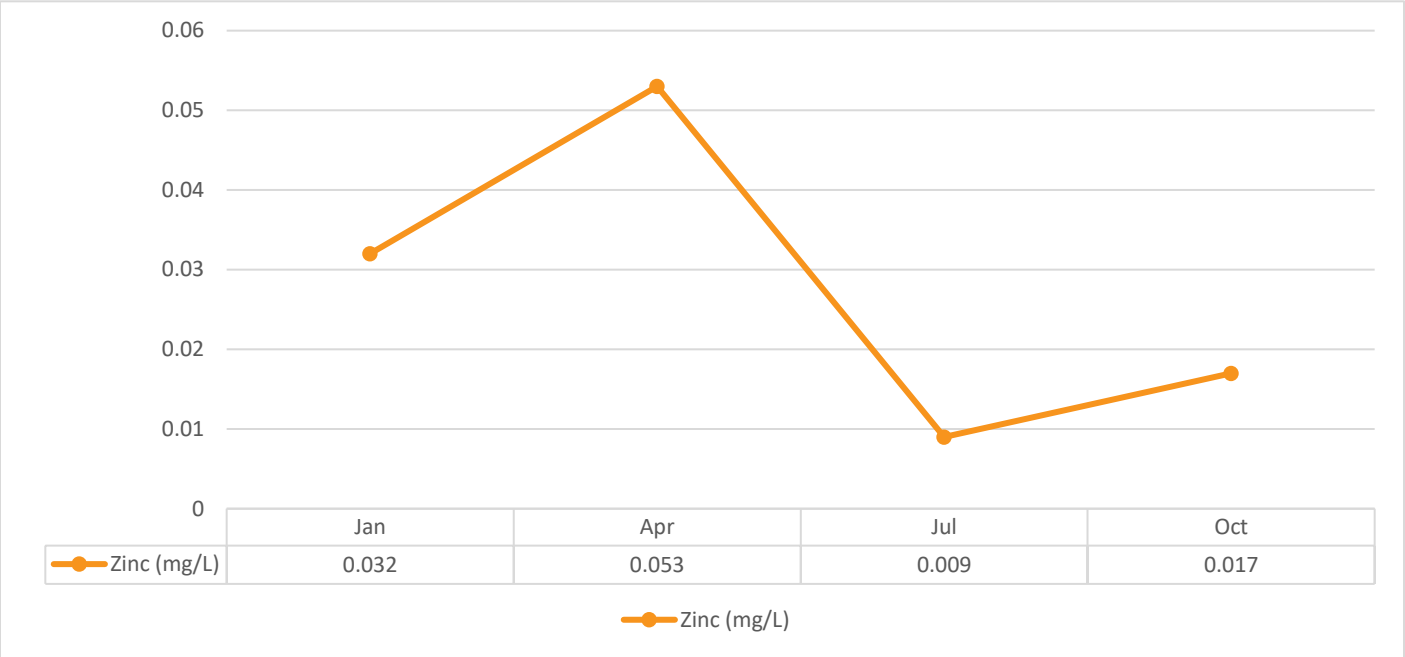
Graph 52. 2024 Final Effluent Iron Concentration



Zinc (Total)

Zinc was sampled quarterly in 2024 and the results ranged between 0.009 mg/L and 0.053 mg/L.

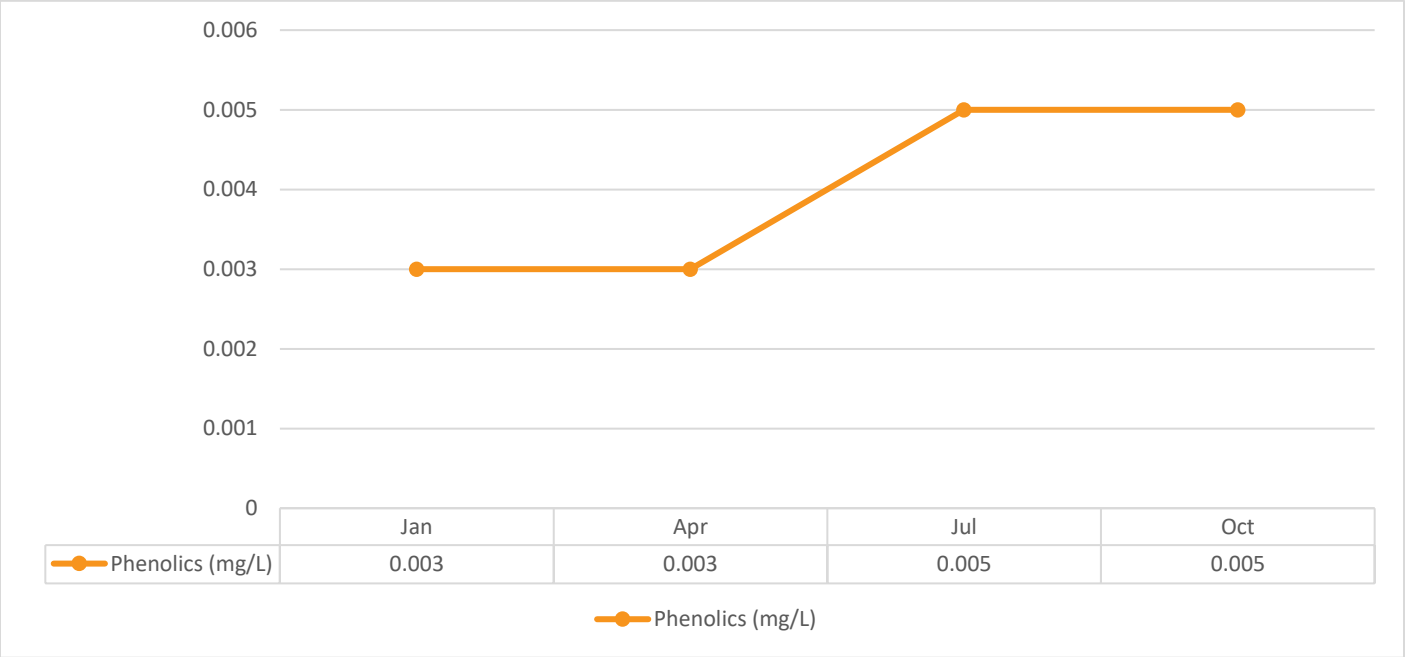
Graph 53. 2024 Final Effluent Zinc Concentration



4AAP-Phenolics

4AAP-Phenolics was sampled quarterly in 2024 and the results ranged between 0.003 mg/L and 0.005 mg/L.

Graph 54. 2024 Final Effluent 4AAP-Phenolics Concentration



Benzene

Benzene was sampled quarterly in 2024 and the results were consistent each quarter at 0.50 µg/L.

Toluene

Toluene was sampled quarterly in 2024 and the results were consistent each quarter at <0.5 µg/L, except for the first quarter result of 0.6 µg/L.

Ethylbenzene

Ethylbenzene was sampled quarterly in 2024 and the results were consistent in each quarter at <0.50 µg/L.

Xylene

Xylene was sampled quarterly in 2024 and the results were consistent in each quarter at <0.50 µg/L.

Quarterly Samples

ECA #1696-BPLL4R requires a grab sample be collected at least quarterly and analyzed for Bis(2-ethylhexyl) Phthalate, Cobalt, Magnesium, Manganese, Potassium and Strontium. Limits are not defined in the ECA.

Table 7. 2024 Final Effluent Results for Quarterly Samples Required by ECA

Parameter	January 4, 2024	April 4, 2024	July 4, 2024	October 3, 2024
Bis (2-ethylexyl) Phthalate (µg/L)	<2	<2	<2	<2
Cobalt (mg/L)	0.000191	0.000244	0.000137	0.000242
Magnesium (mg/L)	14.4	14.0	13.4	12.4
Manganese (mg/L)	0.0138	0.00881	0.00176	0.00174
Potassium (mg/L)	10.8	12.5	13.1	15.8
Strontium (mg/L)	0.405	0.403	0.336	0.332

Operational Challenges and Corrective Actions

(c) The following details describe all operating problems encountered during the reporting period and the corrective actions taken.

Table 8. Lindsay WWTP Operational Challenges

Month	Challenges	Corrective Actions
January	Actiflo 1 Failure	Pump out and repair made to broken mixer blade.
	Actiflo 1 Polymer Low Flow	Flush lines, replace solenoid valve.
	Equalization pump fault	Changed settings and back into service.
	Wellington St SPS Pump 2 Failure	Replace broken blow off and back into service.
	Lindsay St North SPS Pump 3 Failure	Replace fuse in VFD and back into service.
	North Clarifier Scum Rake Not Moving	Heater installed to unfreeze ring gear. Adjust clutch and back into service.
	Rivera Park SPS Pump 4 Failure	Replace fuse and back into service.
	Lindsay ST N SPS Pump 1	Hook up to disconnect and in service.
	Actiflow Effluent Quality	Increase dosing, adjust and calibrate auger dosages.
	Linsday St N SPS Pump 3 Failures	Control board replaced.
February	Lindsay ST N SPS Pump 3 Failure	Remove mouse in control panel causing failure and back into service. Board in VFD panel loose and was put in properly and back into service.
	Polymer Dosing	Manually open valves until replace valves onsite and installed.
	Actiflo 2 Recirculating Pump Failure	Clean splitter screens and back into service. Belt replacement.
	Alum Isolation Valve	Switch to standby pump.
	Sump Pump Polymer Room Failure	Replace with new pump.
	WAS Pump Failure	Replace fuse.
	Actiflo 2 Knife Valve Failure	Take offline for repairs and back into service.
	Equalization Tank Level Erratic	Switch to secondary level, replace level transducer and Miltonic's controller.
	PLC Communication Failure	Run equalization pumps in hand and reset HMI's.
March	Lindsay St N SPS Water Leak	Hooked up potable water truck to feed water to pumps. Complete repair on leak.
	Actiflo Train High Flows	Decrease flows due to high rain and divert to lagoon. Rake splitter box screens.
	Equalization Pump 1 Fault	Locked out until replaced, failed megger test

Month	Challenges	Corrective Actions
	Equalization Tank Radar Level Control	Ran echo profile, replace cable with a shielded cable to prevent electronic interference.
	Rideout SPS Pump 2 Failure	Blockage cleared.
April	Equalization Tank Pump 1	Out for repair.
	Equalization Tank High Level	High flows due to rain storm, inlet flow diverting to lagoon.
	Ridout SPS Pump 1 Failure No Power	Check for electrical issue, no issue found reset breaker, in service.
	Mary St SPS No Pump Operation	Replace blown fuse.
	Polymer System Clogged	Unclog the polymer system. Mixer replaced.
	Lindsay Leachate	Low flow from pumps, turn off pump 2 and leave pump 1 online.
	Central Leachate High Alarm – Transducer Under Water	Pump down and Pump 2 ordered.
	Equalization Tank Level Indicator	Replaced.
	Equalization Tank Pump 2 Failure	Clean bar screens.
May	Central Leachate High Alarm – Transducer Under Water	Pump down.
	Rivera Park SPS – Pump 4 MAS Failure	Pulled to rebuild.
	Wasting Pump 1 Failure	Changed volume amount.
	Actiflo Return Pump Low Pressure	Unclog and return to service.
	Equalization Tank – Miltonic's Replacement	Replace the Miltonic's and transducer.
June	Mary St SPS Pump 1 Failure	Power failure blew fuse, replace fuse and back in service.
	Mary St SPS – Pump 2 Failure	Clear blockage and back into service.
	Wellington St SPS – Pump 1 Line Failure	Replace ball valve on discharge side of pump and back into service.
	Clarifier 2 RAS Pump Failure	Reset alarm and clean weirs.
	Actiflo Sump Pump Failure	Replace pump with spare.
	Actiflo 1 Failure – High Flows	Clean screens. Adjust gate screen.
July	Jennings Creek SPS – Pump Faults	Reset all 3 pumps fault alarms from power failure.
	Mechanical Bar Screen – Plate Come Off	Bolted down rake plate.
	UV Module Failure	Replace module.

Month	Challenges	Corrective Actions
	Anoxic Zone Mixer Failure – Seized	Remove from service.
	Wasting Pump – Isolation Swing Arm Failure	Tighten arm on pump.
	Actiflo 2 Failure – High Flows	Clean screens.
	UV Bank 1 Major Alarm	Clean UV.
	Clarifier 1 Scum Box Clogged	Unclog Scum Box.
	Ridout SPS Generator Failure – causing collection system back up.	Return to utility power, and install rental generator.
August	North Leachate SPS – Pump 2 Failure	Replacement of pump 2.
	Equalization Tank – Pump 2	Replacement of pump 2.
	Ridout SPS – Pump 2 Failure	Unclog pump and back to service.
	Wasting Pump 2 – Low Flow, Discharge Valve Failure	Replace broken air fitting.
	Actiflo 2 – Return Pump Low Pressure	Remove Debris.
	UV Bank 1B	Replace Bulbs and clean.
	Clarifier Return Pump Failure	Reset and monitor.
	Jennings Creek SPS – Level Readings	Pumps on when level is low, turn pumps off to clear alarm and back on when normal level reads normally.
	Jennings Creek SPS – Pump 3	Turned off, tested and operating.
September	Actiflo 2 Failure – Return Pump 2 Low Pressure	Rotate standby then back to duty, clear alarm.
	Lindsay St N SPS – Pump 1 Cooling Water Solenoid Failure	Out of service.
	UV Bank 1B	Acknowledge alarm and cleared. Changed bulbs.
	Actiflo 1 Failure – Inlet Control Valve Failure	Valve not closing completely, close valve manually.
	South Clarifier – Scum Box Full, Pumps Faulted	Reset tripped breakers. Pump 1 still tripping but is fine electronically is offline.
	UV Bank 1A	Changed lamp and sleeves, acknowledge alarm. Clean sleeves.
	UV Bank 1A - Module 3 Failure	Found to be electrical issue, offline
October	UV Bank 1A – Module 3 Failure	Reset power loss and order a control driver.
	Mary ST SPS – Pump 2 Fail	Reset and operating.
	Equalization Tank Blockage	Open valve to remove blockage and back to normal.

Month	Challenges	Corrective Actions
	Actiflo 1 Inlet Valve Failure	Valve faulted on open, open manually. Keeps failing, SCADA not seeing the transfer.
	Jennings Creek SPS - Pump 1 and 2 Failure	Reset VFD and monitor.
	UV Bank 1A –Module 4 Lamp 6	Replace bulb.
	Clarifier Scum Pump 2 – Vibration and Noise	Clear blockage.
	UV Bank 1B	Clean sleeves. Replace bulbs in module 15,16,17
November	Jennings Creek SPS – Pump 3 Failure	Reset VFD and changed set points.
	Ridout SPS – Pump 2 Failure	Showing inhibit on SCADA, cycled power and cleared. Monitor cycles.
	UV Rack 1A	Clean sleeves. Replaced bulbs in module 5 and 17.
	UV Bank 1A – Module 3 Failure	Reset and waiting on parts.
	Actiflo 1 – Inlet Valve Failure	Parts ordered. Changed torque settings.
December	UV Failure – Bank 1A	Module 15, 16 replace lamps.
	Actiflo 1 – Inlet Valve Failure	Repair valve, open and close manually.
	Alum line clogged	Cleaned injectors.
	UV Bank 1A – Module 3 Failure	Waiting on parts, reset controller.
	Ridout SPS – Pump 2 Failure	Reset and monitor pump cycle.
	Polymer Hopper Clogged	Clean Hopper and remove broken piece.
	UV Failure	Both banks working fine, clear faults on controller.

Maintenance Summary

(d) OCWA uses a Work Maintenance System (WMS) to schedule normal maintenance activities and track repairs. WMS is a maintenance tracking system that can generate work orders as well as give summaries of completed and scheduled work. During the year, the operating authority at the facility generates scheduled work orders on a weekly, monthly and annual basis. The service work is recorded in the work order history. This ensures routine and preventative maintenance is carried out and assets are maintained to manufacturer's and/or industry standards. Emergency and capital repair maintenance is completed and added to the system

Refer to **Appendix III: WMS Work Order Summary** for details of equipment upgrades, repairs and service performed in 2024.

Effluent Quality Assurance or Control

(e) Effluent quality assurance is maintained in several ways. Laboratory samples are sent to an accredited laboratory (SGS Canada Inc. – Lakefield or Nautilus Environmental) for analysis of all effluent parameters. Sampling calendars are issued to the operator which denote frequency of sampling. Calendars are used as a tracking mechanism throughout the month to ensure all required samples are collected. These calendars are submitted to the Process Compliance Technician at the end of each month for review. Raw and effluent samples are collected as per the Amended Environmental Compliance Approval and the results are reviewed on a regular basis to ensure compliance with the site's objectives and limits.

Work orders illustrating all scheduled and preventative maintenance to be completed are issued to the operator and/or mechanic. OCWA conducts internal audits of the facility and develops Action Plans to ensure deficiencies are identified.

Calibrations

(f) Calibrations on effluent monitoring equipment were performed by Franklin Empire on December 3-5, 2024 for equipment located at the Lindsay Wastewater Treatment Plant and Sewage Pumping Stations. Masstec Weighing Systems completed calibrations on the Inbound and Outbound scales at the Lindsay Ops Landfill on March 6, 2024 and December 4, 2024.

Please see **Appendix IV: Calibration Reports**.

Best Efforts to Achieve Design Objectives of Condition 6

(g) OCWA uses a number of best efforts to achieve the Effluent Objectives. Effluent quality assurance and control measures include in-house sampling and testing for operational parameters such as suspended solids, pH, phosphorus, dissolved oxygen, etc. In-house testing provides real time results which are then used to enhance process and operational performance. OCWA also collects raw sewage and effluent samples as per the ECA and reviews these results on a regular basis to ensure compliance with ECA objectives and limits.

OCWA uses a computerized maintenance management system, which generates work orders to ensure maintenance of equipment is proactively performed. In addition, OCWA provides regular status reports to the Owner, which includes operational data, equipment inventory, financial statements, maintenance activities and capital improvement recommendations.

OCWA has developed comprehensive manuals detailing operations, maintenance, instrumentation and emergency procedures. To ensure facilities are operated in compliance with applicable legal requirements, facility staff have access to a network of operational compliance and support experts at the cluster, regional and corporate level.

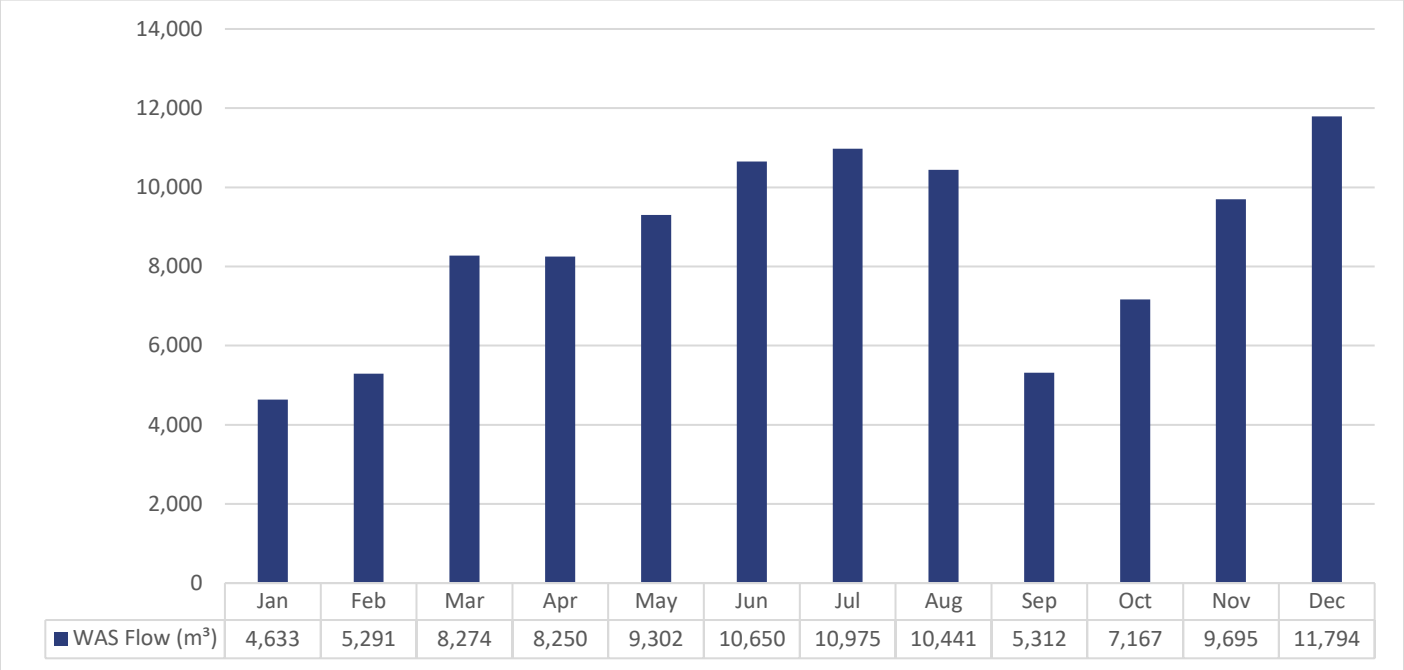
Continuous efforts were made to meet the Effluent Objectives in 2024 including:

- Development of the sampling plan which meets or exceeds the minimum sampling requirements in the ECA;
- Visual Inspection of the entire process while performing rounds;
- Influent monitoring;
- Ensuring that chemicals are being dosed and adjusted as required;
- Continually optimizing the Actiflo process;
- Calibration of lab equipment;
- Annual calibration of flow meters;
- Performing preventative maintenance activities in accordance with work order schedules;
- Performing in-house lab tests on days that data is collected;
- Monitoring treatment processes by performing regular laboratory analysis and review of lab results;
- Sludge monitoring of primary clarifiers & adjustments to pumping volume based on tank levels to reduce solids carryover to the secondary clarifiers;
- Visual review of microbiological activity of activated sludge to ensure appropriate F/M ratio;
- Aeration blower maintenance;
- Pumping lagoon wastewater back to headworks has managed to reduce influent loadings when DO is low.

Sludge

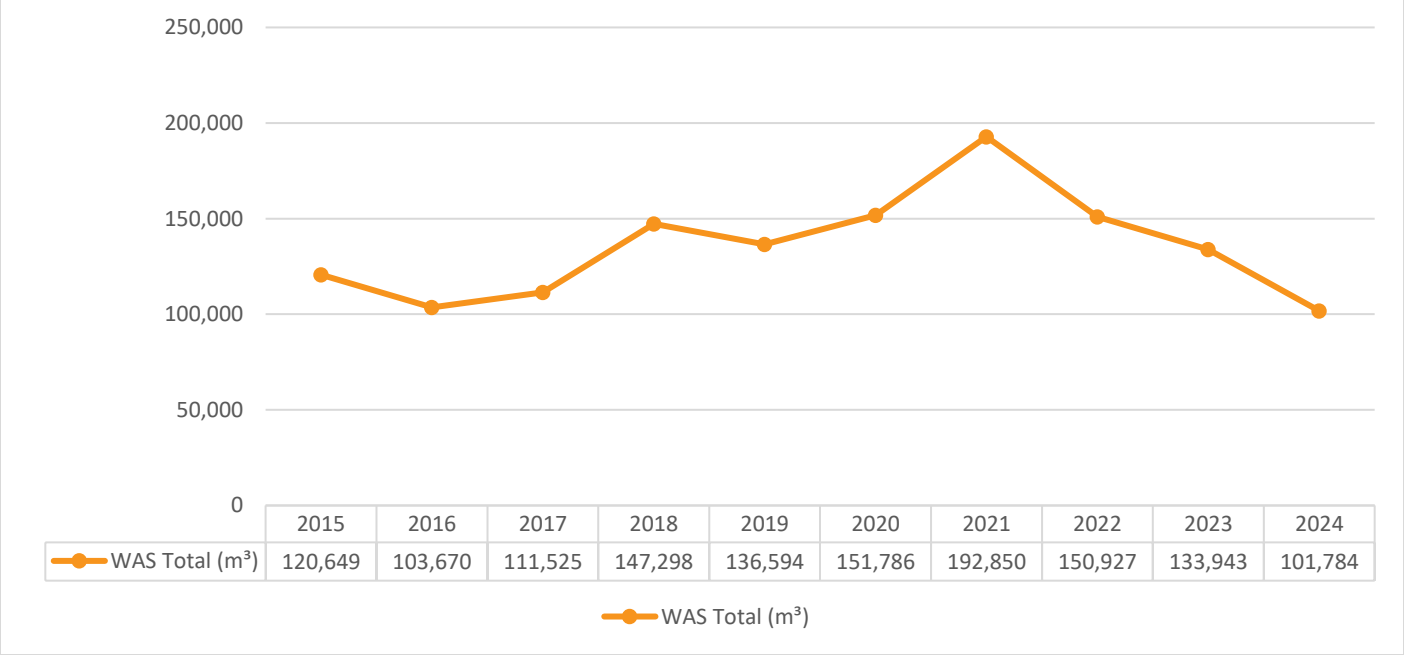
(h) The total volume of sludge generated in 2024 was 101,784 m³, which was a 24.01% decrease in the amount of sludge generated in 2023. Sludge is stored in onsite storage lagoons at the Lindsay WWTP and the volume is not expected to be appreciably different in the next reporting period.

Graph 55. 2024 Monthly Sludge Generation Volumes



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WAS Flow (m³)	4,633	5,291	8,274	8,250	9,302	10,650	10,975	10,441	5,312	7,167	9,695	11,794

Graph 56. Historical Sludge Volume Comparisons



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
WAS Total (m³)	120,649	103,670	111,525	147,298	136,594	151,786	192,850	150,927	133,943	101,784

Sludge Removal

There was no sludge removed from the Lindsay WWTP in 2024.

Complaints

(i) a summary of complaints received by the owner and operating authority is provided in the following table.

Table 9. Summary of Community Complaints

Date	Issue	Actions Taken
April 24, 2024	Resident reported sewer smell along street.	City sanitary sewer within area inspected, and no issues identified. Homeowner advised could be an internal plumbing issue.
May 13, 2024	Resident reported sewage backing up into basement. Determined that main line sewer was also backed up.	City sanitary sewer on Kyle Court was flushed and two bricks and a Ziploc bag of concrete removed, which had caused a blockage.
June 11, 2024	Resident called to complain about noise of manhole lid making noise when cars drive over it.	Cold patch was placed around manhole lid to stop movement.
July 15, 2024	Resident called to report sewer backup in rental property over weekend (July 12th). Backup was caused by no power and generator failure at Ridout St. sewage pumping station	Generator failed due to overheating and coolant line blowing off. Was able to get temporarily running to bring down system levels, until utility power restored. Generator was damaged, and rental brought it.
August 5, 2024	Resident called to report odour coming from "candy cane" vent on forcemain along Angeline St. N.	It was explained to the resident that these vents are air release valves on a forcemain pipe, and are designed to release air, which may be odourous due to sewage in pipe. Vents are equipped with carbon filters, and are checked/changed regularly.
September 17, 2024 (issue occurred September 13, 2024)	Resident at 7 Division St. called to report strong sewage odour in house during regular sewer flushing.	Resident advised that house will be added to list for sewer flushing contractor to be mindful of operations in area.

Date	Issue	Actions Taken
September 17, 2024 (issue occurred September 13, 2024)	Resident at 9 Division St. called to report strong sewage odour in house during regular sewer flushing.	Resident advised that house will be added to list for sewer flushing contractor to be mindful of operations in area.

By-pass, Spill or Abnormal Discharge Events

(j) A summary of By-pass, Overflows, situations outside Normal Operating Conditions, Spills within the meaning of Part X of EPA and Abnormal Discharge Events during 2024.

Bypasses

There were not any bypasses at the Lindsay WWTP during 2024.

Spills

There were not any spills at the Lindsay WWTP during 2024.

Overflows

There were not any overflows at the Lindsay WWTP or pumping stations in 2024.

Abnormal Discharge Events

There were not any abnormal discharge events at the Lindsay WWTP in 2024.

Refer to **Appendix VI: Bypasses, Overflows, Spills or Abnormal Events** for copies of the quarterly Bypass and Overflow reports, and Notice of Exceedance submitted to the Ministry of Environment, Conservation and Parks.

Situations Outside Normal Operating Conditions

"Normal Operating Conditions" means the condition when all unit process(es), excluding Preliminary Treatment System, in a treatment train is operating within its design capacity. In the instances of Situations Outside Normal Operating Conditions, ECA #1696-BPLL4R directs to collect daily sample(s) of the Final Effluent, on any day when there is any situation outside Normal Operating Conditions and sampled for $CBOD_5$, TSS, Total Phosphorus, TKN. As a best practice, samples are also tested for TAN, Nitrite, Nitrate and Nitrite + Nitrate.

There were no instances of Situations outside Normal Operating Conditions in 2024.

Notice of Modifications to Sewage Works

(k) There were not any Notices of Modifications to Sewage Works initiated, worked on or completed in 2024.

A summary of all modifications completed which did not require a Notices of Modifications to Sewage Works are included in **Appendix III: WMS Work Order Summary.**

Conformance with Procedure F-5-1

(l) A summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted.

During the 2024 reporting period there were no incidents of a bypass or overflow within the sanitary sewer system.

The City of Kawartha Lakes continues to work on a Master Servicing Study and Capacity Assessment for all facilities analyzing existing capacity and future growth requirements. Sanitary sewer flushing is conducted on an annual basis (3 years of dead ends/trouble areas and 4th year is a full system flush). During this program, any manholes with infiltration issues are identified and are included in operational maintenance contracts for grouting, frame and cover replacements, etc. A summary of this work can be found in Table X below.

Changes/Updates Construction Schedule

(m) ECA #1696-BPLL4R states that the annual report must contain "any change or updates to the schedule for the completion of construction and commissioning operations of major process(es)/equipment groups in the Proposed Works".

There is work remaining to complete the replacement of the North clarifier column/ scraper, and the South clarifier weir covers. The North clarifier work has been completed and the South clarifier weir covers are scheduled to be completed in 2025.

Deviation from Monitoring Program

(n) ECA #1696-BPLL4R states that the annual report must contain "a summary of any deviations from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year".

The 2024 sample plan states that weekly samples would be collected on Wednesdays and monthly samples would be collected on the first Wednesday of each month. Annual samples were scheduled to be sampled on July 4, 2024. Weekly sampling occurring on Thursday's did need to be considerate of holidays and there was a need to pre-plan alternate sample dates to accommodate holidays and accredited lab holiday hours in 2024. Due to the holidays and the accredited lab holiday hours the third week in December was collected on Wednesday, the fourth and fifth week in December was collected on Monday.

As noted in an email from Sargo Okhovatian, Ministry of the Environment, Conservation and Parks – Review Engineer Assistant, dated October 12, 2018 since neither the City of Kawartha Lakes nor the Ontario Clean Water Agency has control of the delivery schedule of Imported Sewage, the monthly Imported Sewage samples are not required to be sampled on specific dates. As long as there is a minimum one sample from each Imported Sewage stream (Abattoir Waste and Receiving Station) each month then there will be no deviation from the Sample Plan.

There were deviations from the Sample Plan in 2024:

Table 10. Deviations from Sample Plan in 2024

Date	Deviation	Reason
March 2024	Monthly – Abattoir sample not collected	Operations staff were not notified by hauler of abattoir waste being delivered. Amount of abattoir waste has decreased slightly (see Graph 14)
May 2024	Monthly – Abattoir sample not collected	Operations staff were not notified by hauler of abattoir waste being delivered. Amount of abattoir waste has decreased slightly (see Graph 14)
September 2024	Monthly – Abattoir sample not collected	There was no abattoir hauled this month. Amount of abattoir waste has decreased slightly (see Graph 14)
October 10, 2024	Weekly – Bacteriological sample was taken on October 10, 2024 but needed to be resampled and was taken on October 11, 2024	The sample take on October 10, 2024 had developed ice in the bottle and was discarded at lab, the resample was taken the following day to be analyzed.
December 19, 2024	Weekly – Samples scheduled for December 19, 2024, sampled on December 18, 2024	Weekly samples collected one day early due to accommodate holiday for following week.
December 26, 2024	Weekly – Samples scheduled for December 26, 2024, Sampled on December 23, 2024	Weekly samples fell on a holiday and was scheduled on the Monday to accommodate the holiday and accredited lab holiday schedule.

For the Lindsay WWTP 2025 Sample Plan refer to **Appendix II: 2025 Sample Plan**.

Reporting Requirements – Wastewater Collection System

In accordance with the Consolidated Linear Infrastructure – Environmental Compliance Approval #141-W601 the owner shall prepare a performance report on a calendar basis and submit to the Ministry of Environment, Conservation and Parks by March 31 of the calendar year following the period being reported upon.

4.6 (a) a summary of all required monitoring data along with an interpretation of the data and any conclusions drawn from the data evaluation about the need for future modifications to the Authorized System or system operations.

There are no required monitoring data requirements for the Lindsay Sewage Collection System.

4.6 (b) a summary of any operating problems encountered and corrective actions taken.

A summary of any operating problems encountered at any sewage pumping stations within the Lindsay Sewage Collection System are included in **Table 8. 2024 Lindsay WWTP Operational Challenges** above.

Below is a summary of any operating problems encountered in the rest of the collection system.

Table 11. Summary of Operating Problems in Collection System and Corrective Actions (not including pumping stations)

Date	Operational Issue	Corrective Action Taken
February 19, 2024	Manhole chimney failure on King St. (1st manhole West of St. David St.)	Chimney section replaced with moduloc and frame and cover reset.
March 21, 2024	Blockage in sewer main Broad Street @ Thrushwood to North End.	Sewers flushed and cleaned MH497 – MH213 MH213 – MH1206 MH213 – MH535
May 13, 2024	Residents reported sewage backing up into basement. Inspection revealed two manholes on main sewer line on Kyle Court were backed up.	Vac truck called in to flush main line, was determined blockage caused by two bricks and Ziploc bag full of concrete, which was removed.
July 12, 2024	Due to generator failure, and loss of power at Ridout St. SPS a backup occurred in the collection system, backing up into basements.	Power was restored to bring down levels in system, septic hauler brought in to lower levels. Rental generator brought in to replace failed generator.

4.6 (c) a summary of all calibration, maintenance, and repairs carried out on any major structure, equipment, apparatus, mechanisms, or thing forming part of the Municipal Sewage Collection System.

Calibrations on effluent monitoring equipment were performed by Franklin Empire in December 2024 for equipment located at the Lindsay Wastewater Treatment Plant and associated Pumping Stations, as required. Refer to **Appendix IV: Calibration Reports**.

Attached is **Appendix III: WMS Work Order Summary**, a Work Order Summary report, showing all preventative and corrective maintenance activities performed at the Lindsay WWTP, including the pumping stations within the collection system, during 2024.

All other collection system repairs are summarized in the table below:

Table 12. Summary of Major Structure & Equipment Maintenance and Repair

Major Structure	Work Performed
Manhole General Repair	53 Colborne St. E - Reset manhole frame King St (West of St. David St.) – Chimney failed, replaced moduloc sections, reset frame and cover. MH380 St. David St. – remove broken frame pieces from inside manhole.
Manhole Rain Stopper Installation	MH1264 – 71 Ardmore Ave MH235 – Angeline St. N at Langton Court
Manhole Moduloc, Frame and Cover Repair	MH150 60 Duke St. – Replace approximately 4” moduloc + clean out debris MH63 Durham St. E at Duke St. – Replace approximately 4” moduloc + Frame & Cover MH894 10 Pottinger St. – Replace approximately 4” moduloc + Frame & Cover MH1320 27 Walker St. – Replace approximately 14” chimney MH790 149 William St. N – Replace approximately 6” moduloc MH1326 245 Mary St. W – Replace Frame & Cover MH447 133 Queen St. – Replace 6” moduloc + Frame & Cover

Major Structure	Work Performed
Sanitary Lateral Cleaning – Municipal Portion	22 Albert St. N – annual lateral cleaning 97 Pottinger St. – annual root cutting/cleaning

4.6 (d) a summary of any complaints related to the Sewage Works received during the reporting period and any steps taken to address the complaints.

A summary of complaints is above in **Table 9: Summary of Community Complaints.**

4.6 (e) a summary of all Alterations to the Authorized System within the reporting period that are authorized by this Approval including a list of Alterations that pose a Significant Drinking Water Threat.

The table below provides a summary of the projects that saw alterations to the collection system in 2024.

Table 13. Summary of Alterations to Authorized System

Alteration to the Authorized System Project Name	Project Details	Does This Project Pose a Significant Drinking Water Threat (SDWT)?
Lindsay Heights Subdivision – Phase 1	Establishment of new municipal sanitary drainage components for Lindsay Heights Subdivision – Phase 1. Includes 300 and 375 mm diameter sewers on McKay Ave and 200 mm diameter sewers on local streets.	No
Melody Gardens Commercial – Fairgrounds	85.8 m of 200 mm diameter PVC sewers connecting to existing 300 mm PVC sanitary sewers.	No
King St. Reconstruction		No

4.6 (f) a summary of all Collection System Overflow(s) and Spill(s) of Sewage, including:

i) Dates;

ii) Volumes and durations

iii) If applicable, loadings for total suspended solids, BOD, total phosphorus, and total Kjeldahl nitrogen, and sampling results for E. coli;

iv) Disinfection, if any; and

v) Any adverse impact(s) and any corrective actions, if applicable.

The Lindsay Sewage Collection system did not experience any collection system Overflows or Spills in 2024.

4.6 (g) a summary of efforts made to reduce Collection System Overflows, Spills, STP Overflows, and/or STP Bypasses, including the following items, as applicable:

i) A description of projects undertaken and completed in the Authorized System that result in overall overflow reduction or elimination including expenditures and proposed projects to eliminate overflows with estimated budget forecast for the year following that for which the report is submitted.

Annually manhole inspections are completed by City operations staff within the collection systems to identify any deficiencies that may result in excess flows increasing the risk of potential overflows. In an effort to reduce all excess flows, the City has an annual manhole rehabilitation program which includes but is not limited to grouting; moduloc replacement; and frame and cover replacements.

Operationally, where manholes are located in lower lying areas and are at risk of being submerged and contributing to inflow, rain bladders are installed to prevent excess water from entering the system, further reducing the risk of overflow.

During the 2024 reporting period there were not incidents of a bypass or overflow within the sanitary sewer system or the WWTP. However, a summary of operational activities that were performed to help reduce overflow potential are summarized in **Table 12. Summary of Major Structure & Equipment Maintenance and Repair** above.

A project in 2025 includes flushing and CCTV of the entire collection system to help identify deficiencies within the collection system that are contributing to infiltration and inflow, which will help eliminate bypasses and overflows. The budget amount for this project is $800,000. There is also an operational budget of $62,500 available for any other necessary operational repairs to the collection system.

ii) Details of the establishment and maintenance of a PPCP, including a summary of project progresses compared to the PPCP's timeline.

The Lindsay Sewage Collection System does not contain combined sewers and therefore is not required to complete a Pollution Prevention and Control Plan (PPCP).

iii) An assessment of the effectiveness of each action taken.

N/A

iv) An assessment of the ability to meet Procedure F-5-1 or Procedure F-5-5 objectives (as applicable) and if able to meet the objectives, an overview of next steps and estimated timelines to meet the objectives.

N/A

v) Public reporting approach including proactive efforts

SOP WWC02 Wastewater Bypass/Overflow Notification Procedure has been developed and has been in practice since 2021, which clearly outlines all reporting protocols to both regulatory agencies and the public in various situations. This procedure was developed in consultation with Ontario Clean Water Agency, Ministry of Environment, Conservation and Parks and Ministry of Health.

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Appendix I:
Acute Lethality Analysis Results

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT

Daphnia magna
EPS 1/RM/14

Work Order : 253689
Sample Number : 80934

SAMPLE IDENTIFICATION

Company :	Ontario Clean Water Agency, Lindsay WPCP	Sampling Date :	2024-01-04
Location :	Lindsay ON	Sampling Time :	10:40
Substance :	Final Effluent	Date Received :	2024-01-05
Sampling Method :	Grab	Time Received :	13:30
Sampled By :	Z. White	Temperature at Receipt :	8 °C
Sample Description :	Cloudy, light green.	Date Tested :	2024-01-06

Test Method : Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* . Environment Canada EPS 1/RM/14 (Second Edition, December 2000, with February 2016 amendments).

48-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Immobility	0.0 %
	Mean Mortality	0.0 %
100%	Mean Immobility	3.3 %
	Mean Mortality	3.3 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Species :	*Daphnia magna*	Time to First Brood :	7.4 days
Organism Batch :	Dm23-25	Average Brood Size :	31.3
Culture Mortality :	0% (previous 7 days)		

TEST CONDITIONS

Sample Treatment :	None	Number of Replicates :	3
pH Adjustment :	None	Organisms / Replicate :	10
Pre-aeration Rate :	~30 mL/min/L	Organisms / Test Level :	30
Duration of Pre-Aeration :	30 minutes	Organism Loading Rate :	15.0 mL/organism
Test Aeration :	None	Impaired Control Organisms :	0.0%
Hardness Adjustment :	None	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Sodium Chloride		
Date Tested :	2024-01-02	LC50 :	6.2 g/L
Organism Batch :	Dm23-25	95% Confidence Limits :	6.0 - 6.4 g/L
Analyst(s) :	FM	Historical Mean LC50 :	6.3 g/L
Statistical Method :	Spearman-Kärber	Warning Limits (± 2SD) :	5.8 - 6.9 g/L

COMMENTS

- All test validity criteria as specified in the test method were satisfied.

Approved By : _____

Project Manager

Work Order : 253689
Sample Number : 80934

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)*	Hardness (as $CaCO_3$)
Initial Chemistry (100%) :	7.2	8.5	1332	22	103	370 mg/L

0 HOURS

Date & Time : 2024-01-06 10:10
Analyst(s) : FM (PG)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation*	Hardness
100	A	0	0	7.4	8.3	1328	22	100	370
100	B	0	0	7.4	8.3	1328	22	100	370
100	C	0	0	7.4	8.3	1328	22	100	370
Control	A	0	0	8.2	8.2	413	21	98	140
Control	B	0	0	8.2	8.2	413	21	98	140
Control	C	0	0	8.2	8.2	413	21	98	140

Notes:

24 HOURS

Date & Time : 2024-01-07 9:50
Analyst(s) : FM (PG)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	–	0	–	–	–	21
100	B	–	0	–	–	–	21
100	C	–	0	–	–	–	21
Control	A	–	0	–	–	–	21
Control	B	–	0	–	–	–	21
Control	C	–	0	–	–	–	21

Notes:

48 HOURS

Date & Time : 2024-01-08 10:20
Analyst(s) : NP

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	0	0	8.3	8.2	1320	21
100	B	0	0	8.3	8.1	1316	21
100	C	1	1	8.3	8.1	1307	21
Control	A	0	0	8.3	8.3	422	21
Control	B	0	0	8.3	8.3	420	21
Control	C	0	0	8.3	8.3	420	21

Notes: Test organisms in the Control were floating.

Number immobile does not include number dead.

"–" = not measured/not required

* adjusted for temperature and barometric pressure

Test Data Reviewed By : JJ

Date : 2024-01-11

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT
Rainbow Trout
EPS 1/RM/13
EPS 1/RM/50

Work Order : 253689
Sample Number : 80934

SAMPLE IDENTIFICATION

Company :	Ontario Clean Water Agency, Lindsay WPCP	Sampling Date :	2024-01-04
Location :	Lindsay ON	Sampling Time :	10:40
Substance :	Final Effluent	Date Received :	2024-01-05
Sampling Method :	Grab	Time Received :	13:30
Sampled By :	Z. White	Temperature at Receipt :	8 °C
Sample Description :	Cloudy, light green.	Date Tested :	2024-01-06

Test Method(s) : Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout. Environment Canada, EPS 1/RM/13 (2nd Edition, December 2000, with May 2007 and February 2016 amendments).

Procedure for pH Stabilization During the Testing of Acute Lethality of Wastewater Effluent to Rainbow Trout. Environment Canada, EPS 1/RM/50 (March 2008), with deviation(s) as noted.

96-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Impairment	0.0 %
	Mean Mortality	0.0 %
100%	Mean Impairment	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Test Organism :	*Oncorhynchus mykiss*	Mean Fork Length :	36.2 mm
Organism Batch :	T23-30	Range of Fork Lengths :	31 - 41 mm
Control Sample Size :	10	Mean Wet Weight :	0.4 g
Cumulative stock tank mortality rate :	0% (previous 7 days)	Organism Loading Rate :	0.2 g/L
Control organisms showing stress :	0 (at test completion)		

TEST CONDITIONS

Sample Treatment :	pH Stabilization	Number of Replicates :	1
pH Adjustment :	Yes (as per EPS 1/RM/50)	Organisms Per Replicate :	10
pH Stabilization Technique :	pH Controller	Organisms Per Test Level :	10
Gas Mixture Used :	100% CO_2	Pre-aeration/Aeration Rate :	6.5 ± 1 mL/min/L
Test Aeration :	Yes	Total Pre-Aeration Time :	30 minutes
Volume Tested (L) :	20	Test Method Deviation(s) :	Yes (see 'COMMENTS')

REFERENCE TOXICANT DATA

Toxicant :	Potassium Chloride		
Organism Batch :	T23-30	LC50 :	4454 mg/L
Date Tested :	2024-01-05	95% Confidence Limits :	4026 - 4823 mg/L
Analyst(s) :	AJS, PG, NM, JGR	Historical Mean LC50 :	3700 mg/L
Statistical Method :	Linear Regression (MLE)	Warning Limits (± 2SD) :	2798 - 4893 mg/L

COMMENTS

• All test validity criteria as specified in the test method were satisfied.

• Noted Deviation: pH controllers are calibrated at the start of the test, and not daily as described in the test method. Extensive internal method validation of this approach has confirmed the accuracy and stability of the pH controllers over the course of the 96-h test. Additionally, pH of the test and control solutions is measured daily throughout the test.

Approved By : _____

Project Manager

NAUTILUS ENVIRONMENTAL

TOXICITY TEST REPORT

Rainbow Trout
EPS 1/RM/13
EPS 1/RM/50

Work Order : 253689
Sample Number : 80934

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)[3]	TAN (mg/L)[1]	NH3 (mg/L)[2]
Initial Water Chemistry (100%) :	7.1	9.5	1475	15	101	<0.050	0.000
After 30 min pre-aeration :	7.1	9.4	1447	15	100	–	–

0 HOURS

Date & Time 2024-01-06 12:00
Analyst(s) : PG

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation[3]	Hardness (mg/L as $CaCO_3$)	Total Chlorine (mg/L)
100%	0	0	7.1	9.4	1447	15	100	370	–
Control	0	0	8.3	9.4	651	15	99	–	–

Notes:

24 HOURS

Date & Time 2024-01-07 12:00
Analyst(s) : NM

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]
100%	0	0	7.2	–	–	15	–	–
Control	0	0	8.4	–	–	15	–	–

Notes:

48 HOURS

Date & Time 2024-01-08 12:00
Analyst(s) : JGR

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]
100%	0	0	7.2	–	–	15	–	–
Control	0	0	8.4	–	–	15	–	–

Notes:

72 HOURS

Date & Time 2024-01-09 12:00
Analyst(s) : JGR

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]
100%	0	0	7.2	–	–	15	–	–
Control	0	0	8.3	–	–	15	–	–

Notes:

96 HOURS

Date & Time 2024-01-10 12:00
Analyst(s) : JGR

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]	Average pH (0 - 96 h)
100%	0	0	7.2	9.0	1473	15	–	–	7.2
Control	0	0	8.3	9.0	651	15	–	–	8.3

Notes:

[1] TAN = Total ammonia (as N); analysis conducted by Bureau Veritas S.A., Mississauga ON; MDL = 0.05 mg/L.

[2] NH3 = Un-ionized ammonia (calculated from TAN, pH, and temperature according to the test method).

[3] adjusted for temperature and barometric pressure

"–" = not measured/not required

Number impaired does not include number dead.

Test Data Reviewed By : JL

Date : 2024-01-14

CHAIN OF CUSTODY RECORD

AQUATOX

AquaTox Work Order No: 253689

Shipping Address: AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Road
Puslinch, Ontario Canada N0B 2J0

Voice: (519) 763-4412 **Fax:** (519) 763-4419

P.O. Number: 1313 (Kawartha - Lindsay WWTP)
Field Sampler Name (print): ZACHARY WHITE
Signature:
Affiliation: Ontario Clean Water Agency
Sample Storage (prior to shipping): N/A
Custody Relinquished by: ZAC WHITE
Date/Time Shipped: 01/04/2024

Client: Ontario Clean Water Agency
Lindsay WWTP
48 Lagoon Street
Lindsay, ON
K9V4R3

Phone: (705) 731-9125
Fax: (705) 324-9374
Contact: Julie Mather

Sample Identification					Analyses Requested											Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	AquaTox Sample Number	Temp. on arrival	Rainbow Trout Single Concentration	Rainbow Trout LC50	RBT Single Conc. pH Stabilization	RBT LC50 pH Stabilization	*Daphnia magna* Single Concentration	*Daphnia magna* LC50	Fathead Minnow Survival & Growth	*Ceriodaphnia dubia* Survival & Reproduction	*Pseudokirchneriella subcapitata* Growth	Ammonia	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg. 2 x 1L, 3 x 10L, etc.)
2024-01-04	10:40	Final Effluent	80934	8			✓		✓							✓		1 x 23L

For Lab Use Only
Received By: SV
Date: ~~2023~~ 2024-01-05
Time: 13:30
Storage Location:
Storage Temp.(°C)

Please list any special requests or instructions:

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT

Daphnia magna
EPS 1/RM/14

Work Order : 254417
Sample Number : 81927

SAMPLE IDENTIFICATION

Company :	Ontario Clean Water Agency, Lindsay WPCP	Sampling Date :	2024-04-04
Location :	Lindsay ON	Sampling Time :	08:59
Substance :	Final Effluent	Date Received :	2024-04-05
Sampling Method :	Grab	Time Received :	13:25
Sampled By :	T. Smith	Temperature at Receipt :	11 °C
Sample Description :	Clear, light yellow	Date Tested :	2024-04-06

Test Method : Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* . Environment Canada EPS 1/RM/14 (Second Edition, December 2000, with February 2016 amendments).

48-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Immobility	0.0 %
	Mean Mortality	0.0 %
100%	Mean Immobility	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Species :	*Daphnia magna*	Time to First Brood :	8.2 days
Organism Batch :	Dm24-06	Average Brood Size :	38.0
Culture Mortality :	1.0% (previous 7 days)		

TEST CONDITIONS

Sample Treatment :	None	Number of Replicates :	3
pH Adjustment :	None	Organisms per Replicate :	10
Pre-aeration Rate :	~30 mL/min/L	Organisms per Test Level :	30
Duration of Pre-Aeration :	30 minutes	Organism Loading Rate :	15.0 mL/organism
Test Aeration :	None	Impaired Control Organisms :	0.0%
Hardness Adjustment :	None	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Sodium Chloride		
Date Tested :	2024-04-09	LC50 :	6.1 g/L
Organism Batch :	Dm24-06	95% Confidence Limits :	5.8 - 6.3 g/L
Analyst(s) :	FM, AA, JN	Historical Mean LC50 :	6.3 g/L
Statistical Method :	Spearman-Kärber	Warning Limits (± 2SD) :	5.9 - 6.8 g/L

COMMENTS

- All test validity criteria as specified in the test method were satisfied.

Approved By : _____

Project Manager

Work Order : 254417
Sample Number : 81927

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)*	Hardness (as $CaCO_3$)
Initial Chemistry (100%) :	7.2	8.6	1517	21	102	360 mg/L

0 HOURS

Date & Time : 2024-04-06 11:25
Analyst(s) : AA/FM (JJ)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation*	Hardness
100	A	0	0	7.6	8.5	1514	21	100	360
100	B	0	0	7.6	8.5	1514	21	100	360
100	C	0	0	7.6	8.5	1514	21	100	360
Control	A	0	0	8.2	8.4	475	21	100	150
Control	B	0	0	8.2	8.4	475	21	100	150
Control	C	0	0	8.2	8.4	475	21	100	150

Notes:

24 HOURS

Date & Time : 2024-04-07 10:50
Analyst(s) : FM (JJ)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	–	0	–	–	–	21
100	B	–	0	–	–	–	21
100	C	–	0	–	–	–	21
Control	A	–	0	–	–	–	21
Control	B	–	0	–	–	–	21
Control	C	–	0	–	–	–	21

Notes:

48 HOURS

Date & Time : 2024-04-08 11:15
Analyst(s) : FM (SF)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	0	0	8.3	8.2	1504	21
100	B	0	0	8.3	8.1	1505	21
100	C	0	0	8.3	8.2	1486	21
Control	A	0	0	8.3	8.4	488	21
Control	B	0	0	8.3	8.4	489	21
Control	C	0	0	8.2	8.4	488	21

Notes:

Number immobile does not include number dead.

"–" = not measured/not required

* adjusted for temperature and barometric pressure

Test Data Reviewed By : EM
Date : 2024-04-11

NAUTILUS ENVIRONMENTAL
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Tel. (519) 763-4412
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TOXICITY TEST REPORT
Rainbow Trout
EPS 1/RM/13
EPS 1/RM/50

Work Order : 254417
Sample Number : 81927

SAMPLE IDENTIFICATION

Company :	Ontario Clean Water Agency, Lindsay WPCP	Sampling Date :	2024-04-04
Location :	Lindsay ON	Sampling Time :	08:59
Substance :	Final Effluent	Date Received :	2024-04-05
Sampling Method :	Grab	Time Received :	13:25
Sampled By :	T. Smith	Temperature at Receipt :	11 °C
Sample Description :	Clear, light yellow	Date Tested :	2024-04-08

Test Method(s) : Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout. Environment Canada, EPS 1/RM/13 (2nd Edition, December 2000, with May 2007, February 2016, and December 2023 amendments).

Procedure for pH Stabilization During the Testing of Acute Lethality of Wastewater Effluent to Rainbow Trout. Environment Canada, EPS 1/RM/50 (March 2008), with deviation(s) as noted.

96-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Impairment	0.0 %
	Mean Mortality	0.0 %
100%	Mean Impairment	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Test Organism :	*Oncorhynchus mykiss*	Mean Fork Length :	38.7 mm
Organism Batch :	T24-05	Range of Fork Lengths :	35 - 42 mm
Control Sample Size :	10	Mean Wet Weight :	0.5 g
Cumulative stock tank mortality rate :	0% (previous 7 days)	Organism Loading Rate :	0.3 g/L
Control organisms showing stress :	0 (at test completion)		

TEST CONDITIONS

Sample Treatment :	pH Stabilization	Number of Replicates :	1
pH Adjustment :	Yes (as per EPS 1/RM/50)	Organisms Per Replicate :	10
pH Stabilization Technique :	pH Controller	Organisms Per Test Level :	10
Gas Mixture Used :	100% CO_2	Pre-aeration/Aeration Rate :	6.5 ± 1 mL/min/L
Test Aeration :	Yes	Total Pre-Aeration Time :	30 minutes
Volume Tested (L) :	20	Test Method Deviation(s) :	Yes (see 'COMMENTS')

REFERENCE TOXICANT DATA

Toxicant :	Potassium Chloride		
Organism Batch :	T24-05	LC50 :	4476 mg/L
Date Tested :	2024-04-05	95% Confidence Limits :	4070 - 4903 mg/L
Analyst(s) :	NP, JGR, SV, PC	Historical Mean LC50 :	4180 mg/L
Statistical Method :	Linear Regression (MLE)	Warning Limits (± 2SD) :	3135 - 5573 mg/L

COMMENTS

• All test validity criteria as specified in the test method were satisfied.

• Noted Deviation: pH controllers are calibrated at the start of the test, and not daily as described in the test method. Extensive internal method validation of this approach has confirmed the accuracy and stability of the pH controllers over the course of the 96-h test. Additionally, pH of the test and control solutions is measured daily throughout the test.

Approved By : _____

Project Manager

NAUTILUS ENVIRONMENTAL

TOXICITY TEST REPORT

Rainbow Trout
EPS 1/RM/13
EPS 1/RM/50

Work Order : 254417
Sample Number : 81927

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)[3]	TAN (mg/L)[1]	NH3 (mg/L)[2]
Initial Water Chemistry (100%) :	7.1	9.3	1430	16	98	<0.050	0.000
After 30 min pre-aeration :	7.2	9.5	1430	16	100	–	–

0 HOURS

Date & Time 2024-04-08 11:40
Analyst(s) : NWP (SF)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation[3]	Hardness (mg/L as $CaCO_3$)	Total Chlorine (mg/L)
100%	0	0	7.2	9.5	1430	16	100	360	–
Control	0	0	8.0	9.5	718	15	99	–	–

Notes:

24 HOURS

Date & Time 2024-04-09 11:40
Analyst(s) : AJS

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]
100%	0	0	7.2	–	–	15	–	–
Control	0	0	8.1	–	–	15	–	–

Notes:

48 HOURS

Date & Time 2024-04-10 11:40
Analyst(s) : NP (SV)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]
100%	0	0	7.2	–	–	15	–	–
Control	0	0	8.1	–	–	15	–	–

Notes:

72 HOURS

Date & Time 2024-04-11 11:40
Analyst(s) : NWP (JGR)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]
100%	0	0	7.3	–	–	15	–	–
Control	0	0	8.1	–	–	15	–	–

Notes:

96 HOURS

Date & Time 2024-04-12 11:40
Analyst(s) : PC

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]	Average pH (0 - 96 h)
100%	0	0	7.3	9.6	1530	16	–	–	7.2
Control	0	0	8.2	9.7	748	16	–	–	8.1

Notes:

[1] TAN = Total ammonia (as N); analysis conducted by Bureau Veritas S.A., Mississauga ON; MDL = 0.05 mg/L.

[2] NH3 = Un-ionized ammonia (calculated from TAN, pH, and temperature according to the test method).

[3] adjusted for temperature and barometric pressure

"–" = not measured/not required

Number impaired does not include number dead.

Test Data Reviewed By : EM

Date : 2024-04-15

CHAIN OF CUSTODY RECORD

AQUATOX

AquaTox Work Order No: 254417

Shipping Address: AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Road
Puslinch, Ontario Canada N0B 2J0

Voice: (519) 763-4412 **Fax:** (519) 763-4419

P.O. Number: 1313 (Kawartha - Lindsay WWTP)
Field Sampler Name (print): Ty Smith
Signature: Ty Smith
Affiliation: Ontario Clean Water Agency
Sample Storage (prior to shipping): N/A
Custody Relinquished by:
Date/Time Shipped: 2024/04/04

Client: Ontario Clean Water Agency
Lindsay WWTP
48 Lagoon Street
Lindsay, ON
K9V4R3

Phone: (705) 731-9125
Fax: (705) 324-9374
Contact: Julie Mather

Sample Identification					Analyses Requested											Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	AquaTox Sample Number	Temp. on arrival	Rainbow Trout Single Concentration	Rainbow Trout LC50	RBT Single Conc. pH Stabilization	RBT LC50 pH Stabilization	*Daphnia magna* Single Concentration	*Daphnia magna* LC50	Fathead Minnow Survival & Growth	*Ceriodaphnia dubia* Survival & Reproduction	*Pseudokirchneriella subcapitata* Growth	Ammonia	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg. 2 x 1L, 3 x 10L, etc.)
2024-04-04	08:59	Final Effluent	81927	11			✓		✓							✓		1 x 23L

For Lab Use Only
Received By: MLP
Date: 2024-04-05
Time: ~~20~~ 13:25
Storage Location:
Storage Temp.(°C)

Please list any special requests or instructions:

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT

Daphnia magna
EPS 1/RM/14

Work Order : 255237
Sample Number : 83038

SAMPLE IDENTIFICATION

Company :	Ontario Clean Water Agency, Lindsay WPCP	Sampling Date :	2024-07-04
Location :	Lindsay ON	Sampling Time :	11:06
Substance :	Final Effluent	Date Received :	2024-07-05
Sampling Method :	Grab	Time Received :	10:00
Sampled By :	T. Smith	Temperature at Receipt :	21 °C
Sample Description :	Clear, light green	Date Tested :	2024-07-05

Test Method : Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* . Environment Canada EPS 1/RM/14 (Second Edition, December 2000, with February 2016 amendments).

48-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Immobility	0.0 %
	Mean Mortality	0.0 %
100%	Mean Immobility	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Species :	*Daphnia magna*	Time to First Brood :	7.0 days
Organism Batch :	Dm24-12	Average Brood Size :	35.3
Culture Mortality :	0.3% (previous 7 days)		

TEST CONDITIONS

Sample Treatment :	None	Number of Replicates :	3
pH Adjustment :	None	Organisms per Replicate :	10
Pre-aeration Rate :	~30 mL/min/L	Organisms per Test Level :	30
Duration of Pre-Aeration :	0 minutes	Organism Loading Rate :	15.0 mL/organism
Test Aeration :	None	Impaired Control Organisms :	0.0%
Hardness Adjustment :	None	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Sodium Chloride		
Date Tested :	2024-07-02	LC50 :	6.0 g/L
Organism Batch :	Dm24-12	95% Confidence Limits :	5.6 - 6.4 g/L
Analyst(s) :	GR, AA	Historical Mean LC50 :	6.3 g/L
Statistical Method :	Linear Regression (MLE)	Warning Limits (± 2SD) :	5.9 - 6.8 g/L

COMMENTS

- All test validity criteria as specified in the test method were satisfied.

Approved By : _____
Project Manager

Work Order : 255237
Sample Number : 83038

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)*	Hardness (as $CaCO_3$)
Initial Chemistry (100%) :	7.3	7.5	1244	22	92	380 mg/L

0 HOURS

Date & Time : 2024-07-05 14:35
Analyst(s) : JGR/AA (JGR)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation*	Hardness
100	A	0	0	7.3	7.5	1244	22	92	380
100	B	0	0	7.3	7.5	1244	22	92	380
100	C	0	0	7.3	7.5	1244	22	92	380
Control	A	0	0	8.2	8.3	451	21	99	140
Control	B	0	0	8.2	8.3	451	21	99	140
Control	C	0	0	8.2	8.3	451	21	99	140

Notes:

24 HOURS

Date & Time : 2024-07-06 14:15
Analyst(s) : AA (NM)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	–	0	–	–	–	21
100	B	–	0	–	–	–	21
100	C	–	0	–	–	–	21
Control	A	–	0	–	–	–	21
Control	B	–	0	–	–	–	21
Control	C	–	0	–	–	–	21

Notes:

48 HOURS

Date & Time : 2024-07-07 14:40
Analyst(s) : NM

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	0	0	8.3	8.6	1231	21
100	B	0	0	8.3	8.5	1222	21
100	C	0	0	8.3	8.5	1226	21
Control	A	0	0	8.2	8.4	455	21
Control	B	0	0	8.3	8.4	457	21
Control	C	0	0	8.2	8.5	455	21

Notes:

Number immobile does not include number dead.

"–" = not measured/not required
* adjusted for temperature and barometric pressure

Test Data Reviewed By : JJ
Date : 2024-07-10

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT
Rainbow Trout
EPS 1/RM/13
EPS 1/RM/50

Work Order : 255237
Sample Number : 83038

SAMPLE IDENTIFICATION

Company :	Ontario Clean Water Agency, Lindsay WPCP	Sampling Date :	2024-07-04
Location :	Lindsay ON	Sampling Time :	11:06
Substance :	Final Effluent	Date Received :	2024-07-05
Sampling Method :	Grab	Time Received :	10:00
Sampled By :	T. Smith	Temperature at Receipt :	21 °C
Sample Description :	Clear, light green	Date Tested :	2024-07-06

Test Method(s) : Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout. Environment Canada, EPS 1/RM/13 (2nd Edition, December 2000, with May 2007, February 2016, and December 2023 amendments).

Procedure for pH Stabilization During the Testing of Acute Lethality of Wastewater Effluent to Rainbow Trout. Environment Canada, EPS 1/RM/50 (March 2008), with deviation(s) as noted.

96-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Impairment	0.0 %
	Mean Mortality	0.0 %
100%	Mean Impairment	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Test Organism :	*Oncorhynchus mykiss*	Mean Fork Length :	45.5 mm
Organism Batch :	T24-12	Range of Fork Lengths :	40 - 50 mm
Control Sample Size :	10	Mean Wet Weight :	0.9 g
Cumulative stock tank mortality rate :	0% (previous 7 days)	Organism Loading Rate :	0.4 g/L
Control organisms showing stress :	0 (at test completion)		

TEST CONDITIONS

Sample Treatment :	pH Stabilization	Number of Replicates :	1
pH Adjustment :	Yes (as per EPS 1/RM/50)	Organisms Per Replicate :	10
pH Stabilization Technique :	pH Controller	Organisms Per Test Level :	10
Gas Mixture Used :	100% CO_2	Pre-aeration/Aeration Rate :	6.5 ± 1 mL/min/L
Test Aeration :	Yes	Total Pre-Aeration Time :	30 minutes
Volume Tested (L) :	20	Test Method Deviation(s) :	Yes (see 'COMMENTS')

REFERENCE TOXICANT DATA

Toxicant :	Potassium Chloride		
Organism Batch :	T24-12	LC50 :	4446 mg/L
Date Tested :	2024-07-01	95% Confidence Limits :	3949 - 5004 mg/L
Analyst(s) :	DT, AJS	Historical Mean LC50 :	4325 mg/L
Statistical Method :	Linear Regression (MLE)	Warning Limits (± 2SD) :	3595 - 5204 mg/L

COMMENTS

• All test validity criteria as specified in the test method were satisfied.

• Noted Deviation: pH controllers are calibrated at the start of the test, and not daily as described in the test method. Extensive internal method validation of this approach has confirmed the accuracy and stability of the pH controllers over the course of the 96-h test. Additionally, pH of the test and control solutions is measured daily throughout the test.

Approved By : _____

Project Manager

NAUTILUS ENVIRONMENTAL

TOXICITY TEST REPORT

Rainbow Trout
EPS 1/RM/13
EPS 1/RM/50

Work Order : 255237
Sample Number : 83038

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)[3]	TAN (mg/L)[1]	NH3 (mg/L)[2]
Initial Water Chemistry (100%) :	7.3	8.5	1247	15	90	<0.050	0.000
After 30 min pre-aeration :	7.4	8.5	1248	15	89	–	–

0 HOURS

Date & Time 2023-07-06 11:10
Analyst(s) : JCS

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation[3]	Hardness (mg/L as $CaCO_3$)	Total Chlorine (mg/L)
100%	0	0	7.4	8.5	1248	15	89	380	–
Control	0	0	8.2	9.4	747	15	100	–	–

Notes:

24 HOURS

Date & Time 2023-07-07 10:00
Analyst(s) : JCS

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]
100%	0	0	7.3	–	–	15	–	–
Control	0	0	8.2	–	–	15	–	–

Notes:

48 HOURS

Date & Time 2023-07-08 11:40
Analyst(s) : JGR

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]
100%	0	0	7.5	–	–	15	–	–
Control	0	0	8.1	–	–	15	–	–

Notes:

72 HOURS

Date & Time 2023-07-09 10:30
Analyst(s) : DT

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]
100%	0	0	7.3	–	–	15	–	–
Control	0	0	8.1	–	–	15	–	–

Notes:

96 HOURS

Date & Time 2023-07-10 10:45
Analyst(s) : DT

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]	Average pH (0 - 96 h)
100%	0	0	7.5	8.6	1267	16	–	–	7.4
Control	0	0	8.0	9.1	733	16	–	–	8.1

Notes:

[1] TAN = Total ammonia (as N); analysis conducted by Bureau Veritas S.A., Mississauga ON; MDL = 0.05 mg/L.

[2] NH3 = Un-ionized ammonia (calculated from TAN, pH, and temperature according to the test method).

[3] adjusted for temperature and barometric pressure

"–" = not measured/not required

Number impaired does not include number dead.

Test Data Reviewed By : EM

Date : 2024-07-11

CHAIN OF CUSTODY RECORD

AQUATOX

AquaTox Work Order No: 255237

Shipping Address: AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Road
Puslinch, Ontario Canada N0B 2J0

Voice: (519) 763-4412 **Fax:** (519) 763-4419

P.O. Number: 1313 (Kawartha - Lindsay WWTP)
Field Sampler Name (print): Ty Smith
Signature: Ty Smith
Affiliation: Ontario Clean Water Agency
Sample Storage (prior to shipping): N/A
Custody Relinquished by:
Date/Time Shipped:

Client: Ontario Clean Water Agency
Lindsay WWTP
48 Lagoon Street
Lindsay, ON
K9V4R3

Phone: (705) 731-9125
Fax: (705) 324-9374
Contact: Julie Mather

Sample Identification					Analyses Requested											Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	AquaTox Sample Number	Temp. on arrival	Rainbow Trout Single Concentration	Rainbow Trout LC50	RBT Single Conc pH Stabilization	RBT LC50 pH Stabilization	*Daphnia magna* Single Concentration	*Daphnia magna* LC50	Fathead Minnow Survival & Growth	*Ceriodaphnia dubia* Survival & Reproduction	*Pseudokirchneriella subcapitata* Growth	Ammonia	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg. 2 x 1L, 3 x 10L, etc.)
2024-07-04	11:06	Final Effluent	83038	21			✓		✓							✓		1 x 23L

For Lab Use Only
Received By: MWP/DT
Date: 2024-07-05
Time: 10:00
Storage Location:
Storage Temp.(°C)

Please list any special requests or instructions:

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT

Daphnia magna
EPS 1/RM/14

Work Order : 256069
Sample Number : 84342

SAMPLE IDENTIFICATION

Company :	Ontario Clean Water Agency, Lindsay WPCP	Sampling Date :	2024-10-03
Location :	Lindsay ON	Sampling Time :	12:50
Substance :	Final Effluent	Date Received :	2024-10-07
Sampling Method :	Grab	Time Received :	15:20
Sampled By :	T. Blacklock	Temperature at Receipt :	17 °C
Sample Description :	Clear, light yellow.	Date Tested :	2024-10-08

Test Method : Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* . Environment Canada EPS 1/RM/14 (Second Edition, December 2000, with February 2016 amendments).

48-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Immobility	0.0 %
	Mean Mortality	0.0 %
100%	Mean Immobility	0.0 %
	Mean Mortality	6.7 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Species :	*Daphnia magna*	Time to First Brood :	7.2 days
Organism Batch :	Dm24-19	Average Brood Size :	35.9
Culture Mortality :	3.0% (previous 7 days)		

TEST CONDITIONS

Sample Treatment :	None	Number of Replicates :	3
pH Adjustment :	None	Organisms per Replicate :	10
Pre-aeration Rate :	~30 mL/min/L	Organisms per Test Level :	30
Duration of Pre-Aeration :	30 minutes	Organism Loading Rate :	15.0 mL/organism
Test Aeration :	None	Impaired Control Organisms :	0.0%
Hardness Adjustment :	None	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Sodium Chloride		
Date Tested :	2024-10-11	LC50 :	6.3 g/L
Organism Batch :	Dm24-19	95% Confidence Limits :	5.8 - 6.8 g/L
Analyst(s) :	JGR, NM, SSF	Historical Mean LC50 :	6.3 g/L
Statistical Method :	Binomial	Warning Limits (± 2SD) :	5.8 - 7.0 g/L

COMMENTS

- All test validity criteria as specified in the test method were satisfied.

Approved By : _____
Project Manager

Work Order : 256069
Sample Number : 84342

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)*	Hardness (as $CaCO_3$)
Initial Chemistry (100%) :	7.5	9.2	1315	20	107	290 mg/L

0 HOURS

Date & Time : 2024-10-08 12:35
Analyst(s) : GR (NM)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation*	Hardness
100	A	0	0	8.0	8.5	1309	20	100	290
100	B	0	0	8.0	8.5	1309	20	100	290
100	C	0	0	8.0	8.5	1309	20	100	290
Control	A	0	0	8.3	8.6	503	21	100	150
Control	B	0	0	8.3	8.6	503	21	100	150
Control	C	0	0	8.3	8.6	503	21	100	150

Notes:

24 HOURS

Date & Time : 2024-10-09 12:00
Analyst(s) : CGR

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	–	1	–	–	–	20
100	B	–	0	–	–	–	20
100	C	–	0	–	–	–	20
Control	A	–	0	–	–	–	20
Control	B	–	0	–	–	–	20
Control	C	–	0	–	–	–	20

Notes:

48 HOURS

Date & Time : 2024-10-10 12:35
Analyst(s) : MK (JGR)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	2	0	8.5	8.2	1320	20
100	B	0	0	8.5	8.2	1317	20
100	C	0	0	8.5	8.2	1309	20
Control	A	0	0	8.4	8.3	515	20
Control	B	0	0	8.3	8.3	513	20
Control	C	0	0	8.3	8.3	509	20

Notes:

Number immobile does not include number dead.

"–" = not measured/not required
* adjusted for temperature and barometric pressure

Test Data Reviewed By : EM
Date : 2024-10-08

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT
Rainbow Trout
EPS 1/RM/13
EPS 1/RM/50

Work Order : 256069
Sample Number : 84342

SAMPLE IDENTIFICATION

Company :	Ontario Clean Water Agency, Lindsay WPCP	Sampling Date :	2024-10-03
Location :	Lindsay ON	Sampling Time :	12:50
Substance :	Final Effluent	Date Received :	2024-10-07
Sampling Method :	Grab	Time Received :	15:20
Sampled By :	T. Blacklock	Temperature at Receipt :	17 °C
Sample Description :	Clear, light yellow.	Date Tested :	2024-10-08

Test Method(s) : Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout. Environment Canada, EPS 1/RM/13 (2nd Edition, December 2000, with May 2007, February 2016, and December 2023 amendments).

Procedure for pH Stabilization During the Testing of Acute Lethality of Wastewater Effluent to Rainbow Trout. Environment Canada, EPS 1/RM/50 (March 2008), with deviation(s) as noted.

96-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Impairment	0.0 %
	Mean Mortality	0.0 %
100%	Mean Impairment	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Test Organism :	*Oncorhynchus mykiss*	Mean Fork Length :	38.5 mm
Organism Batch :	T24-20	Range of Fork Lengths :	36 - 41 mm
Control Sample Size :	10	Mean Wet Weight :	0.5 g
Cumulative stock tank mortality rate :	0% (previous 7 days)	Organism Loading Rate :	0.3 g/L
Control organisms showing stress :	0 (at test completion)		

TEST CONDITIONS

Sample Treatment :	pH Stabilization	Number of Replicates :	1
pH Adjustment :	Yes (as per EPS 1/RM/50)	Organisms Per Replicate :	10
pH Stabilization Technique :	pH Controller	Organisms Per Test Level :	10
Gas Mixture Used :	100% CO_2	Pre-aeration/Aeration Rate :	6.5 ± 1 mL/min/L
Test Aeration :	Yes	Total Pre-Aeration Time :	30 minutes
Volume Tested (L) :	16	Test Method Deviation(s) :	Yes (see 'COMMENTS')

REFERENCE TOXICANT DATA

Toxicant :	Potassium Chloride		
Organism Batch :	T24-20	LC50 :	3381 mg/L
Date Tested :	2024-10-01	95% Confidence Limits :	2880 - 3923 mg/L
Analyst(s) :	AJS, NWP, JGR, GR	Historical Mean LC50 :	3580 mg/L
Statistical Method :	Linear Regression (MLE)	Warning Limits (± 2SD) :	2572 - 4982 mg/L

COMMENTS

• All test validity criteria as specified in the test method were satisfied.

• Noted Deviation: pH controllers are calibrated at the start of the test, and not daily as described in the test method. Extensive internal method validation of this approach has confirmed the accuracy and stability of the pH controllers over the course of the 96-h test. Additionally, pH of the test and control solutions is measured daily throughout the test.

Approved By : _____

Project Manager

NAUTILUS ENVIRONMENTAL

TOXICITY TEST REPORT

Rainbow Trout
EPS 1/RM/13
EPS 1/RM/50

Work Order : 256069
Sample Number : 84342

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)[3]	TAN (mg/L)[1]	NH3 (mg/L)[2]
Initial Water Chemistry (100%) :	7.4	9.8	1243	14	99	0.069	0.000
After 30 min pre-aeration :	7.5	9.5	1224	14	98	–	–

0 HOURS

Date & Time 2024-10-08 14:50
Analyst(s) : NWP

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation[3]	Hardness (mg/L as $CaCO_3$)	Total Chlorine (mg/L)
100%	0	0	7.5	9.5	1224	14	98	290	–
Control	0	0	8.0	9.9	749	14	100	–	–

Notes:

24 HOURS

Date & Time 2024-10-09 14:20
Analyst(s) : AJS

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]
100%	0	0	7.5	–	–	15	–	–
Control	0	0	8.2	–	–	15	–	–

Notes:

48 HOURS

Date & Time 2024-10-10 12:50
Analyst(s) : NWP

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]
100%	0	0	7.6	–	–	15	–	–
Control	0	0	8.0	–	–	15	–	–

Notes:

72 HOURS

Date & Time 2024-10-11 14:50
Analyst(s) : NM

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]
100%	0	0	7.5	–	–	15	–	–
Control	0	0	8.1	–	–	15	–	–

Notes:

96 HOURS

Date & Time 2024-10-12 13:50
Analyst(s) : NWP

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	TAN (mg/L)[1]	NH3 (mg/L)[2]	Average pH (0 - 96 h)
100%	0	0	7.5	9.5	1233	15	–	–	7.5
Control	0	0	8.0	9.1	748	15	–	–	8.1

Notes:

[1] TAN = Total ammonia (as N); analysis conducted by Bureau Veritas S.A., Mississauga ON; MDL = 0.05 mg/L.

[2] NH3 = Un-ionized ammonia (calculated from TAN, pH, and temperature according to the test method).

[3] adjusted for temperature and barometric pressure

"–" = not measured/not required

Number impaired does not include number dead.

Test Data Reviewed By : JJ

Date : 2024-10-16

CHAIN OF CUSTODY RECORD

AQUATOX

256069

Shipping Address: AquaTox Testing & Consulting Inc
B-11 Nicholas Beaver Road
Puslinch, Ontario Canada N0B 2J0

Voice: (519) 763-4412 **Fax:** (519) 763-4419

P.O. Number	1313 (Kawartha - Lindsay WWTP)
Field Sampler Name (print)	[illegible]
Signature	[illegible]
Affiliation	Ontario Clean Water Agency
Sample Storage (prior to shipping)	N/A
Custody Relinquished by	
Date/Time Shipped	

Client:	Ontario Clean Water Agency Lindsay WWTP 48 Lagoon Street Lindsay, ON K9V4R3
Phone:	(705) 731-9125
Fax:	(705) 324-9374
Contact:	Julie Mather

Sample Identification					Analyses Requested											Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	AquaTox Sample Number	Temp. on arrival	Rainbow Trout Single Concentration	Rainbow Trout LC50	RBT Single Conc pH Stabilization	RBT LC50 pH Stabilization	*Daphnia magna* Single Concentration	*Daphnia magna* LC50	Fathead Minnow Survival & Growth	*Ceriodaphnia dubia* Survival & Reproduction	*Pseudokirchneriella subcapitata* Growth	Ammonia	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg. 2 x 1L, 3 x 10L, etc.)
2024-10-08	12:50	Final Effluent	84342	17			✓		✓							✓		1 x 23L

For Lab Use Only	
Received By	[illegible]
Date	2024-10-08
Time	~~11:00~~ 15:20
Storage Location	CN
Storage Temp (°C)	2024-10-10

AW

Please list any special requests or instructions:

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Appendix II:
2025 Sample Plan

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Sampling Calendar
Lindsay WWTP (1313) Works # 110000383

Imported sewage samples can be taken at any point in the month but all other samples must be collected on date indicated.

Weekly	
Raw – Grab	- pH, Temperature
Raw - Comp	-BOD, TSS, TP, TKN, TAN
Final – Comp	- CBOD5, TSS, TP, Total (Ammonia+Ammonium) Nitrogen, TKN, Nitrite, Nitrate, Nitrate+Nitrite
Final – Grab	-E.Coli, pH, Temperature
Final - Calculated	- Unionized Ammonia

Monthly	
Lagoon Cell 5-	- TSS, CBOD, BOD, TSS, TKN, TAN, TP
Imported Sewage - Abattoir (IndW)	-BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN
Imported Sewage - Septage Receiving Station (InW2)	- BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN

Quarterly	
Final – Grab	- Iron, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate, Benzene, Xylene, Phenols
Final – Comp	- Aluminum, Cobalt, Zinc, Copper, Boron, Lead, Toluene, ethyle-Benzene
Acute Lethality	Final - Grab Rainbow Trout & Magna daphnia – Aquatox Testing & Consulting Ltd.

Annual	
Biosolids - Grab Lagoon 4	- Total Solids, Total Phosphorus, Total Ammonia Nitrogen, Nitrate as Nitrogen, Metal Scan (Arsenic, Cadmium, Cobalt, Chromium, Copper, Lead, Mercury, Zinc, Molybdenum, Nickel, Potassium, Selenium

Operator Name: _____ Operator Signature: _____ *Date:* _____
(all collection and submission complete as per ECA, WSER, etc. plus any special requirements).
Sampler to initial on the date samples are taken and check off the appropriate sample box

January 2025

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
Sample Collection Time Frames (Days)	Weekly >5 & <10 Bi-Weekly >10 & <20 Monthly >20 & <40 Quarterly >60 & <120 Annual +/- 30 days 36 Months +/- 60 days 60 Months +/- 90 days		**1** **Stat Holiday New Year's Day**	**2**	**3**	**4**
5	**6**	**7** ☐ Weekly ☐ Monthly ☐ Quarterly	**8**	**9**	**10**	**11**
12	**13**	**14** ☐ Weekly	**15**	**16**	**17**	**18**
19	**20**	**21** ☐ Weekly	**22**	**23**	**24**	**25**
26	**27**	**28** ☐ Weekly	**29**	**30**	**31**	

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Sampling Calendar
Lindsay WWTP (1313) Works # 110000383

Imported sewage samples can be taken at any point in the month but all other samples must be collected on date indicated.

Weekly	
Raw – Grab	- pH, Temperature
Raw - Comp	-BOD, TSS, TP, TKN, TAN
Final – Comp	- CBOD5, TSS, TP, Total (Ammonia+Ammonium) Nitrogen, TKN, Nitrite, Nitrate, Nitrate+Nitrite
Final – Grab	-E.Coli, pH, Temperature
Final - Calculated	- Unionized Ammonia

Monthly	
Lagoon Cell 5-	- TSS, CBOD, BOD, TSS, TKN, TAN, TP
Imported Sewage - Abattoir (IndW)	-BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN
Imported Sewage - Septage Receiving Station (InW2)	- BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN

Quarterly	
Final – Grab	- Iron, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate, Benzene, Xylene, Phenols
Final – Comp	- Aluminum, Cobalt, Zinc, Copper, Boron, Lead, Toluene, ethyle-Benzene
Acute Lethality	Final - Grab Rainbow Trout & Magna daphnia – Aquatox Testing & Consulting Ltd.

Annual	
Biosolids - Grab Lagoon 4	- Total Solids, Total Phosphorus, Total Ammonia Nitrogen, Nitrate as Nitrogen, Metal Scan (Arsenic, Cadmium, Cobalt, Chromium, Copper, Lead, Mercury, Zinc, Molybdenum, Nickel, Potassium, Selenium

Operator Name: _____ Operator Signature: _____ *Date:* _____
(all collection and submission complete as per ECA, WSER, etc. plus any special requirements).
Sampler to initial on the date samples are taken and check off the appropriate sample box

February 2025

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
Sample Collection Time Frames (Days)	Weekly >5 & <10 Bi-Weekly >10 & <20 Monthly >20 & <40 Quarterly >60 & <120 Annual +/- 30 days 36 Months +/- 60 days 60 Months +/- 90 days					**1**
2	**3**	**4** ☐ Weekly ☐ Monthly	**5**	**6**	**7**	**8**
9	**10**	**11** ☐ Weekly	**12**	**13**	**14**	**15**
16	**17** **Stat Holiday Family Day**	**18** ☐ Weekly	**19**	**20**	**21**	**22**
23	**24**	**25** ☐ Weekly	**26**	**27**	**28**	

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Sampling Calendar
Lindsay WWTP (1313) Works # 110000383

Imported sewage samples can be taken at any point in the month but all other samples must be collected on date indicated.

Weekly	
Raw – Grab	- pH, Temperature
Raw - Comp	-BOD, TSS, TP, TKN, TAN
Final – Comp	- CBOD5, TSS, TP, Total (Ammonia+Ammonium) Nitrogen, TKN, Nitrite, Nitrate, Nitrate+Nitrite
Final – Grab	-E.Coli, pH, Temperature
Final - Calculated	- Unionized Ammonia

Monthly	
Lagoon Cell 5-	- TSS, CBOD, BOD, TSS, TKN, TAN, TP
Imported Sewage - Abattoir (IndW)	-BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN
Imported Sewage - Septage Receiving Station (InW2)	- BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN

Quarterly	
Final – Grab	- Iron, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate, Benzene, Xylene, Phenols
Final – Comp	- Aluminum, Cobalt, Zinc, Copper, Boron, Lead, Toluene, ethyle-Benzene
Acute Lethality	Final - Grab Rainbow Trout & Magna daphnia – Aquatox Testing & Consulting Ltd.

Annual	
Biosolids - Grab Lagoon 4	- Total Solids, Total Phosphorus, Total Ammonia Nitrogen, Nitrate as Nitrogen, Metal Scan (Arsenic, Cadmium, Cobalt, Chromium, Copper, Lead, Mercury, Zinc, Molybdenum, Nickel, Potassium, Selenium

Operator Name: _____ Operator Signature: _____ *Date:* _____
(all collection and submission complete as per ECA, WSER, etc. plus any special requirements).
Sampler to initial on the date samples are taken and check off the appropriate sample box

March 2025

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
Sample Collection Time Frames (Days) Weekly >5 & <10 Bi-Weekly >10 & <20 Monthly >20 & <40 Quarterly >60 & <120 Annual +/- 30 days 36 Months +/- 60 days 60 Months +/- 90 days						**1**
2	**3**	**4** ☐ Weekly ☐ Monthly	**5**	**6**	**7**	**8**
9	**10**	**11** ☐ Weekly	**12**	**13**	**14**	**15**
16	**17**	**18** ☐ Weekly	**19**	**20**	**21**	**22**
23	**24**	**25** ☐ Weekly	**26**	**27**	**28**	**29**
30	**31**					

Ontario Clean Water Agency
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Sampling Calendar
Lindsay WWTP (1313) Works # 110000383

Imported sewage samples can be taken at any point in the month but all other samples must be collected on date indicated.

Weekly	
Raw – Grab	- pH, Temperature
Raw - Comp	-BOD, TSS, TP, TKN, TAN
Final – Comp	- CBOD5, TSS, TP, Total (Ammonia+Ammonium) Nitrogen, TKN, Nitrite, Nitrate, Nitrate+Nitrite
Final – Grab	-E.Coli, pH, Temperature
Final - Calculated	- Unionized Ammonia

Monthly	
Lagoon Cell 5-	- TSS, CBOD, BOD, TSS, TKN, TAN, TP
Imported Sewage - Abattoir (IndW)	-BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN
Imported Sewage - Septage Receiving Station (InW2)	- BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN

Quarterly	
Final – Grab	- Iron, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate, Benzene, Xylene, Phenols
Final – Comp	- Aluminum, Cobalt, Zinc, Copper, Boron, Lead, Toluene, ethyle-Benzene
Acute Lethality	Final - Grab Rainbow Trout & Magna daphnia – Aquatox Testing & Consulting Ltd.

Annual	
Biosolids - Grab Lagoon 4	- Total Solids, Total Phosphorus, Total Ammonia Nitrogen, Nitrate as Nitrogen, Metal Scan (Arsenic, Cadmium, Cobalt, Chromium, Copper, Lead, Mercury, Zinc, Molybdenum, Nickel, Potassium, Selenium

Operator Name: _____ Operator Signature: _____ *Date:* _____
(all collection and submission complete as per ECA, WSER, etc. plus any special requirements).
Sampler to initial on the date samples are taken and check off the appropriate sample box

April 2025

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
		1 ☐ Weekly ☐ Monthly ☐ Quarterly	**2**	**3**	**4**	**5**
6	**7**	**8** ☐ Weekly	**9**	**10**	**11**	**12**
13	**14**	**15** ☐ Weekly	**16**	**17**	**18** **Stat Holiday Good Friday**	**19**
20	**21** **Stat Holiday Easter Monday**	**22** ☐ Weekly	**23**	**24**	**25**	**26**
27	**28**	**29** ☐ Weekly	**30**		Sample Collection Time Frames (Days)	Weekly >5 & <10 Bi-Weekly >10 & <20 Monthly >20 & <40 Quarterly >60 & <120 Annual +/- 30 days 36 Months +/- 60 days 60 Months +/- 90 days

Ontario Clean Water Agency
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Sampling Calendar
Lindsay WWTP (1313) Works # 110000383

Imported sewage samples can be taken at any point in the month but all other samples must be collected on date indicated.

Weekly	
Raw – Grab	- pH, Temperature
Raw - Comp	-BOD, TSS, TP, TKN, TAN
Final – Comp	- CBOD5, TSS, TP, Total (Ammonia+Ammonium) Nitrogen, TKN, Nitrite, Nitrate, Nitrate+Nitrite
Final – Grab	-E.Coli, pH, Temperature
Final - Calculated	- Unionized Ammonia

Monthly	
Lagoon Cell 5-	- TSS, CBOD, BOD, TSS, TKN, TAN, TP
Imported Sewage - Abattoir (IndW)	-BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN
Imported Sewage - Septage Receiving Station (InW2)	- BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN

Quarterly	
Final – Grab	- Iron, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate, Benzene, Xylene, Phenols
Final – Comp	- Aluminum, Cobalt, Zinc, Copper, Boron, Lead, Toluene, ethyle-Benzene
Acute Lethality	Final - Grab Rainbow Trout & Magna daphnia – Aquatox Testing & Consulting Ltd.

Annual	
Biosolids - Grab Lagoon 4	- Total Solids, Total Phosphorus, Total Ammonia Nitrogen, Nitrate as Nitrogen, Metal Scan (Arsenic, Cadmium, Cobalt, Chromium, Copper, Lead, Mercury, Zinc, Molybdenum, Nickel, Potassium, Selenium

Operator Name: _____ Operator Signature: _____ *Date:* _____
(all collection and submission complete as per ECA, WSER, etc. plus any special requirements).
Sampler to initial on the date samples are taken and check off the appropriate sample box

May 2025

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
Sample Collection Time Frames (Days)	Weekly >5 & <10 Bi-Weekly >10 & <20 Monthly >20 & <40 Quarterly >60 & <120 Annual +/- 30 days 36 Months +/- 60 days 60 Months +/- 90 days			**1**	**2**	**3**
4	**5**	**6** ☐ Weekly ☐ Monthly	**7**	**8**	**9**	**10**
11	**12**	**13** ☐ Weekly	**14**	**15**	**16**	**17**
18	**19** **Stat Holiday Victoria Day**	**20** ☐ Weekly	**21**	**22**	**23**	**24**
25	**26**	**27** ☐ Weekly	**28**	**29**	**30**	**31**

Ontario Clean Water Agency
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Sampling Calendar
Lindsay WWTP (1313) Works # 110000383

Imported sewage samples can be taken at any point in the month but all other samples must be collected on date indicated.

Weekly	
Raw – Grab	- pH, Temperature
Raw - Comp	-BOD, TSS, TP, TKN, TAN
Final – Comp	- CBOD5, TSS, TP, Total (Ammonia+Ammonium) Nitrogen, TKN, Nitrite, Nitrate, Nitrate+Nitrite
Final – Grab	-E.Coli, pH, Temperature
Final - Calculated	- Unionized Ammonia

Monthly	
Lagoon Cell 5-	- TSS, CBOD, BOD, TSS, TKN, TAN, TP
Imported Sewage - Abattoir (IndW)	-BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN
Imported Sewage - Septage Receiving Station (InW2)	- BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN

Quarterly	
Final – Grab	- Iron, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate, Benzene, Xylene, Phenols
Final – Comp	- Aluminum, Cobalt, Zinc, Copper, Boron, Lead, Toluene, ethyle-Benzene
Acute Lethality	Final - Grab Rainbow Trout & Magna daphnia – Aquatox Testing & Consulting Ltd.

Annual	
Biosolids - Grab Lagoon 4	- Total Solids, Total Phosphorus, Total Ammonia Nitrogen, Nitrate as Nitrogen, Metal Scan (Arsenic, Cadmium, Cobalt, Chromium, Copper, Lead, Mercury, Zinc, Molybdenum, Nickel, Potassium, Selenium

Operator Name: _____ Operator Signature: _____ *Date:* _____
(all collection and submission complete as per ECA, WSER, etc. plus any special requirements).
Sampler to initial on the date samples are taken and check off the appropriate sample box

June 2025

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
1	**2**	**3** ☐ Weekly ☐ Monthly	**4**	**5**	**6**	**7**
8	**9**	**10** ☐ Weekly	**11**	**12**	**13**	**14**
15	**16**	**17** ☐ Weekly	**18**	**19**	**20**	**21**
22	**23**	**24** ☐ Weekly	**25**	**26**	**27**	**28**
29	**30**				Sample Collection Time Frames (Days)	Weekly >5 & <10 Bi-Weekly >10 & <20 Monthly >20 & <40 Quarterly >60 & <120 Annual +/- 30 days 36 Months +/- 60 days 60 Months +/- 90 days

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Sampling Calendar
Lindsay WWTP (1313) Works # 110000383

Imported sewage samples can be taken at any point in the month but all other samples must be collected on date indicated.

Weekly	
Raw – Grab	- pH, Temperature
Raw - Comp	-BOD, TSS, TP, TKN, TAN
Final – Comp	- CBOD5, TSS, TP, Total (Ammonia+Ammonium) Nitrogen, TKN, Nitrite, Nitrate, Nitrate+Nitrite
Final – Grab	-E.Coli, pH, Temperature
Final - Calculated	- Unionized Ammonia

Monthly	
Lagoon Cell 5-	- TSS, CBOD, BOD, TSS, TKN, TAN, TP
Imported Sewage - Abattoir (IndW)	-BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN
Imported Sewage - Septage Receiving Station (InW2)	- BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN

Quarterly	
Final – Grab	- Iron, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate, Benzene, Xylene, Phenols
Final – Comp	- Aluminum, Cobalt, Zinc, Copper, Boron, Lead, Toluene, ethyle-Benzene
Acute Lethality	Final - Grab Rainbow Trout & Magna daphnia – Aquatox Testing & Consulting Ltd.

Annual	
Biosolids - Grab Lagoon 4	- Total Solids, Total Phosphorus, Total Ammonia Nitrogen, Nitrate as Nitrogen, Metal Scan (Arsenic, Cadmium, Cobalt, Chromium, Copper, Lead, Mercury, Zinc, Molybdenum, Nickel, Potassium, Selenium

Operator Name: _____ Operator Signature: _____ *Date:* _____
(all collection and submission complete as per ECA, WSER, etc. plus any special requirements).
Sampler to initial on the date samples are taken and check off the appropriate sample box

July 2025

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
		1 **Stat Holiday Canada Day**	**2** ☐ Weekly ☐ Monthly ☐ Quarterly ☐ Annual Biosolids	**3**	**4**	**5**
6	**7**	**8** ☐ Weekly	**9**	**10**	**11**	**12**
13	**14**	**15** ☐ Weekly	**16**	**17**	**18**	**19**
20	**21**	**22** ☐ Weekly	**23**	**24**	**25**	**26**
27	**28**	**29** ☐ Weekly	**30**	**31**	Sample Collection Time Frames (Days)	Weekly >5 & <10 Bi-Weekly >10 & <20 Monthly >20 & <40 Quarterly >60 & <120 Annual +/- 30 days 36 Months +/- 60 days 60 Months +/- 90 days

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Sampling Calendar
Lindsay WWTP (1313) Works # 110000383

Imported sewage samples can be taken at any point in the month but all other samples must be collected on date indicated.

Weekly	
Raw – Grab	- pH, Temperature
Raw - Comp	-BOD, TSS, TP, TKN, TAN
Final – Comp	- CBOD5, TSS, TP, Total (Ammonia+Ammonium) Nitrogen, TKN, Nitrite, Nitrate, Nitrate+Nitrite
Final – Grab	-E.Coli, pH, Temperature
Final - Calculated	- Unionized Ammonia

Monthly	
Lagoon Cell 5-	- TSS, CBOD, BOD, TSS, TKN, TAN, TP
Imported Sewage - Abattoir (IndW)	-BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN
Imported Sewage - Septage Receiving Station (InW2)	- BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN

Quarterly	
Final – Grab	- Iron, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate, Benzene, Xylene, Phenols
Final – Comp	- Aluminum, Cobalt, Zinc, Copper, Boron, Lead, Toluene, ethyle-Benzene
Acute Lethality	Final - Grab Rainbow Trout & Magna daphnia – Aquatox Testing & Consulting Ltd.

Annual	
Biosolids - Grab Lagoon 4	- Total Solids, Total Phosphorus, Total Ammonia Nitrogen, Nitrate as Nitrogen, Metal Scan (Arsenic, Cadmium, Cobalt, Chromium, Copper, Lead, Mercury, Zinc, Molybdenum, Nickel, Potassium, Selenium

Operator Name: _____ Operator Signature: _____ *Date:* _____
(all collection and submission complete as per ECA, WSER, etc. plus any special requirements).
Sampler to initial on the date samples are taken and check off the appropriate sample box

August 2025

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
Sample Collection Time Frames (Days) Weekly >5 & <10 Bi-Weekly >10 & <20 Monthly >20 & <40 Quarterly >60 & <120 Annual +/- 30 days 36 Months +/- 60 days 60 Months +/- 90 days					**1**	**2**
3	**4** **Stat Holiday Civic Day**	**5** ☐ Weekly ☐ Monthly	**6**	**7**	**8**	**9**
10	**11**	**12** ☐ Weekly	**13**	**14**	**15**	**16**
17	**18**	**19** ☐ Weekly	**20**	**21**	**22**	**23**
24	**25**	**26** ☐ Weekly	**27**	**28**	**29**	**30**
31						

Ontario Clean Water Agency
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Sampling Calendar
Lindsay WWTP (1313) Works # 110000383

Imported sewage samples can be taken at any point in the month but all other samples must be collected on date indicated.

Weekly	
Raw – Grab	- pH, Temperature
Raw - Comp	-BOD, TSS, TP, TKN, TAN
Final – Comp	- CBOD5, TSS, TP, Total (Ammonia+Ammonium) Nitrogen, TKN, Nitrite, Nitrate, Nitrate+Nitrite
Final – Grab	-E.Coli, pH, Temperature
Final - Calculated	- Unionized Ammonia

Monthly	
Lagoon Cell 5-	- TSS, CBOD, BOD, TSS, TKN, TAN, TP
Imported Sewage - Abattoir (IndW)	-BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN
Imported Sewage - Septage Receiving Station (InW2)	- BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN

Quarterly	
Final – Grab	- Iron, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate, Benzene, Xylene, Phenols
Final – Comp	- Aluminum, Cobalt, Zinc, Copper, Boron, Lead, Toluene, ethyle-Benzene
Acute Lethality	Final - Grab Rainbow Trout & Magna daphnia – Aquatox Testing & Consulting Ltd.

Annual	
Biosolids - Grab Lagoon 4	- Total Solids, Total Phosphorus, Total Ammonia Nitrogen, Nitrate as Nitrogen, Metal Scan (Arsenic, Cadmium, Cobalt, Chromium, Copper, Lead, Mercury, Zinc, Molybdenum, Nickel, Potassium, Selenium

Operator Name: _____ Operator Signature: _____ *Date:* _____
(all collection and submission complete as per ECA, WSER, etc. plus any special requirements).
Sampler to initial on the date samples are taken and check off the appropriate sample box

September 2025

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
	1 **Stat Holiday Labour Day**	**2** ☐ Weekly ☐ Monthly	**3**	**4**	**5**	**6**
7	**8**	**9** ☐ Weekly	**10**	**11**	**12**	**13**
14	**15**	**16** ☐ Weekly	**17**	**18**	**19**	**20**
21	**22**	**23** ☐ Weekly	**24**	**25**	**26**	**27**
28	**29**	**30** **Stat Holiday T&R**			Sample Collection Time Frames (Days)	Weekly >5 & <10 Bi-Weekly >10 & <20 Monthly >20 & <40 Quarterly >60 & <120 Annual +/- 30 days 36 Months +/- 60 days 60 Months +/- 90 days

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Sampling Calendar
Lindsay WWTP (1313) Works # 110000383

Imported sewage samples can be taken at any point in the month but all other samples must be collected on date indicated.

Weekly	
Raw – Grab	- pH, Temperature
Raw - Comp	-BOD, TSS, TP, TKN, TAN
Final – Comp	- CBOD5, TSS, TP, Total (Ammonia+Ammonium) Nitrogen, TKN, Nitrite, Nitrate, Nitrate+Nitrite
Final – Grab	-E.Coli, pH, Temperature
Final - Calculated	- Unionized Ammonia

Monthly	
Lagoon Cell 5-	- TSS, CBOD, BOD, TSS, TKN, TAN, TP
Imported Sewage - Abattoir (IndW)	-BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN
Imported Sewage - Septage Receiving Station (InW2)	- BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN

Quarterly	
Final – Grab	- Iron, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate, Benzene, Xylene, Phenols
Final – Comp	- Aluminum, Cobalt, Zinc, Copper, Boron, Lead, Toluene, ethyle-Benzene
Acute Lethality	Final - Grab Rainbow Trout & Magna daphnia – Aquatox Testing & Consulting Ltd.

Annual	
Biosolids - Grab Lagoon 4	- Total Solids, Total Phosphorus, Total Ammonia Nitrogen, Nitrate as Nitrogen, Metal Scan (Arsenic, Cadmium, Cobalt, Chromium, Copper, Lead, Mercury, Zinc, Molybdenum, Nickel, Potassium, Selenium

Operator Name: _____ Operator Signature: _____ *Date:* _____
(all collection and submission complete as per ECA, WSER, etc. plus any special requirements).
Sampler to initial on the date samples are taken and check off the appropriate sample box

October 2025

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
Sample Collection Time Frames (Days)	Weekly >5 & <10 Bi-Weekly >10 & <20 Monthly >20 & <40 Quarterly >60 & <120 Annual +/- 30 days 36 Months +/- 60 days 60 Months +/- 90 days		**1** ☐ Weekly ☐ Monthly ☐ Quarterly	**2**	**3**	**4**
5	**6**	**7** ☐ Weekly	**8**	**9**	**10**	**11**
12	**13** **Stat Holiday Thanksgiving Day**	**14** ☐ Weekly	**15**	**16**	**17**	**18**
19	**20**	**21** ☐ Weekly	**22**	**23**	**24**	**25**
26	**27**	**28** ☐ Weekly	**29**	**30**	**31**	

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Sampling Calendar
Lindsay WWTP (1313) Works # 110000383

Imported sewage samples can be taken at any point in the month but all other samples must be collected on date indicated.

Weekly	
Raw – Grab	- pH, Temperature
Raw - Comp	-BOD, TSS, TP, TKN, TAN
Final – Comp	- CBOD5, TSS, TP, Total (Ammonia+Ammonium) Nitrogen, TKN, Nitrite, Nitrate, Nitrate+Nitrite
Final – Grab	-E.Coli, pH, Temperature
Final - Calculated	- Unionized Ammonia

Monthly	
Lagoon Cell 5-	- TSS, CBOD, BOD, TSS, TKN, TAN, TP
Imported Sewage - Abattoir (IndW)	-BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN
Imported Sewage - Septage Receiving Station (InW2)	- BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN

Quarterly	
Final – Grab	- Iron, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate, Benzene, Xylene, Phenols
Final – Comp	- Aluminum, Cobalt, Zinc, Copper, Boron, Lead, Toluene, ethyle-Benzene
Acute Lethality	Final - Grab Rainbow Trout & Magna daphnia – Aquatox Testing & Consulting Ltd.

Annual	
Biosolids - Grab Lagoon 4	- Total Solids, Total Phosphorus, Total Ammonia Nitrogen, Nitrate as Nitrogen, Metal Scan (Arsenic, Cadmium, Cobalt, Chromium, Copper, Lead, Mercury, Zinc, Molybdenum, Nickel, Potassium, Selenium

Operator Name: _____ Operator Signature: _____ *Date:* _____
(all collection and submission complete as per ECA, WSER, etc. plus any special requirements).
Sampler to initial on the date samples are taken and check off the appropriate sample box

November 2025

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
Sample Collection Time Frames (Days)	Weekly >5 & <10 Bi-Weekly >10 & <20 Monthly >20 & <40 Quarterly >60 & <120 Annual +/- 30 days 36 Months +/- 60 days 60 Months +/- 90 days					**1**
2	**3**	**4** ☐ Weekly ☐ Monthly	**5**	**6**	**7**	**8**
9	**10**	**11** **Stat Holiday Remembrance Day**	**12** ☐ Weekly	**13**	**14**	**15**
16	**17**	**18** ☐ Weekly	**19**	**2**	**21**	**22**
23	**24**	**25** ☐ Weekly	**26**	**27**	**28**	**29**
30						

Ontario Clean Water Agency
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Sampling Calendar
Lindsay WWTP (1313) Works # 110000383

Imported sewage samples can be taken at any point in the month but all other samples must be collected on date indicated.

Weekly	
Raw – Grab	- pH, Temperature
Raw - Comp	-BOD, TSS, TP, TKN, TAN
Final – Comp	- CBOD5, TSS, TP, Total (Ammonia+Ammonium) Nitrogen, TKN, Nitrite, Nitrate, Nitrate+Nitrite
Final – Grab	-E.Coli, pH, Temperature
Final - Calculated	- Unionized Ammonia

Monthly	
Lagoon Cell 5-	- TSS, CBOD, BOD, TSS, TKN, TAN, TP
Imported Sewage - Abattoir (IndW)	-BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN
Imported Sewage - Septage Receiving Station (InW2)	- BOD, TSS, TP, Total (Ammonia+ Ammonium) /nitrogen, TKN

Quarterly	
Final – Grab	- Iron, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate, Benzene, Xylene, Phenols
Final – Comp	- Aluminum, Cobalt, Zinc, Copper, Boron, Lead, Toluene, ethyle-Benzene
Acute Lethality	Final - Grab Rainbow Trout & Magna daphnia – Aquatox Testing & Consulting Ltd.

Annual	
Biosolids - Grab Lagoon 4	- Total Solids, Total Phosphorus, Total Ammonia Nitrogen, Nitrate as Nitrogen, Metal Scan (Arsenic, Cadmium, Cobalt, Chromium, Copper, Lead, Mercury, Zinc, Molybdenum, Nickel, Potassium, Selenium

Operator Name: _____ Operator Signature: _____ *Date:* _____
(all collection and submission complete as per ECA, WSER, etc. plus any special requirements).
Sampler to initial on the date samples are taken and check off the appropriate sample box

December 2025

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
	1	**2** ☐ Weekly ☐ Monthly	**3**	**4**	**5**	**6**
7	**8**	**9** ☐ Weekly	**10**	**11**	**12**	**13**
14	**15**	**16** ☐ Weekly	**17**	**18**	**19**	**20**
21 *Please review SGS's Holiday schedule prior to sampling	**22**	**23** ☐ Weekly	**24** **Stat Holiday Christmas Day**	**25** **Stat Holiday Boxing Day**	**26**	**27**
28	**39**	**30** ☐ Weekly	**31**		Sample Collection Time Frames (Days)	Weekly >5 & <10 Bi-Weekly >10 & <20 Monthly >20 & <40 Quarterly >60 & <120 Annual +/- 30 days 36 Months +/- 60 days 60 Months +/- 90 days

Ontario Clean Water Agency
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Appendix III:
WMS Work Order Summary

Work Order	Description
2774645	DEFERRED 1313, Lindsay WWT, Covid Surveillance, Sampling
3108259	DEFERRED 1313, Lindsay WWT Sump Pump Grating RAS/WAS Basement
3289939	DEFERRED 1313, Central Leachate SPS, Pump 4, Overload, Replace
3341488	DEFERRED 1313, Lindsay St N. SPS, Motor Pump Subm #1, Seal, Leak
3575720	DEFERRED 1313, Lindsay WWT, ESA Inspection Defects, Repairs
3624330	DEFERRED 1313, Lindsay WWT, Alum Isolation Valve, Replacement
3703722	DEFERRED 1313, Lindsay St. North SPS, Transfer Switch, Indicator Lights, Replace
3705725	DEFERRED 1313, Jennings Creek SPS, Roof Repair/Refurbish
3706509	DEFERRED 1313, Lindsay WWT, EQ Lagoon Pipe, Inspection
3706594	DEFERRED 1313, Wellington SPS, Piping Repair
3710245	Alarm Dialer Testing (1m) - 1313 SPS - KTC
3710252	Blower Inspection (1m) - 1313 - KTC
3710589	Building and Grounds Maintenance (1m) - 1313 - KTC
3710591	Lindsay St N Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3710600	Central Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3710609	South Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3710635	Engine Diesel (1m) - 1313 Fairgounds SPS - KTC
3710654	Engine Diesel (1m) - 1313 Logie SPS - KTC
3710673	Engine Diesel (1m) - 1313 Riverview SPS - KTC
3710692	Engine Diesel (1m) - 1313 Jennings Creek SPS - KTC
3710711	Engine Diesel (1m) - 1313 Ridout SPS - KTC
3710730	Engine Diesel (1m) - 1313 Lindsay St N SPS - KTC
3710749	Engine Diesel (1m) - 1313 Main Plant - KTC
3710768	Gear Drive Insp/Service - (1m) - 1313 Inlet Grit Removal - KTC
3710774	UV Light Bank Cleaning & Insp. (1m) - 1313 UV Route - KTC
3712972	Tank Alum Inspection (1m) - 1313 - KTC
3713238	FEP Contact List Update (1y) - 1313 - KTC
3713242	Pump Cent Insp/Service (3m) - 1313 Ridout SPS Pump #1 - KTC
3713250	Pump Cent Insp/Service (3m) - 1313 Ridout SPS Pump #2 - KTC
3713258	Pump Cent Insp/Service (3m) - 1313 Ridout SPS Pump #3 - KTC
3713266	Pump Cent Insp/Service (6m) - 1313 Clarifier #1 RASP401 - KTC
3713274	Pump Cent Insp/Service (6m) - 1313 Clarifier #2 RASP402 - KTC
3713282	Pump Cent Insp/Service (6m) - 1313 WASP401 - KTC
3729015	North Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3729148	Alarm Dialer Testing (1m) - 1313 Main Plant - KTC
3732546	Engine Gas Honda Portable - (1m) - 1313 Lindsay WWT Shop - KTC
3734062	Chemical Feed System Insp (1m) - 1313 - KTC
3734748	Engine Diesel (1m) - 1313 Rivera Park SPS - KTC
3734772	Odour Control Fan Maintenance (3m) - 1313 Rivera Park SPS - KTC
3735183	Lagoon Inspection (1m) - 1313 - KTC
3735546	HS03 H & S Equipment Check (1m) - 1313 - KTC
3736148	Actuator Electric Inspection/Service (1y) - 1313 - KTC

3738291	Operator PDM Entry & Review (1m) - 1313 - KTC
3738927	Corporate Facility Workplace H & S Inspection (1m) - 1313 - KTC
3758943	1313, Lindsay WWTP, WAS Pump 1 Fault, Alarm
3760026	1313, Lindsay WWT, Heat Trace Water Damage, Inspect Heat Trace Control Cabinet
3760036	1313, Lindsay WWT, FEP101 VFD Display Mounting, Mount Danfoss VFD Display on MCC Door
3760037	1313, Lindsay St North SPS, UPS Failure, UPS in PLC Cabinet, New
3760043	1313, Lindsay WWT, WAS Pump 1 Solenoid Failure, Replace
3760486	1313, Fairgrounds SPS, UPS Error, Investigate/Repair
3761589	1313, Lindsay WWT, Actiflo 1, Injection Mixer, Repair
3761629	1313, Lindsay WWT, Polymer Distribution System, Solenoid/Injection Site, Clean/Repair
3761640	1313, Lindsay WWT, Certify Davit Lifting Device Bases, Repair
3761922	1313, Wellington SPS, Pump, Blowoff, Ball Valve, Replacement
3761946	Analyzer DO Inspection (1m) - 1313 DO Analyzer Route - KTC
3762029	1313, Lindsay WWT, Low Tertiary Building Temperature, Alarm
3762089	1313, Wellington SPS, Sump Pump, Replacement
3762211	1313, Lindsay ST North, Pump #3 Fault, Alarm
3762213	1313, Jennings Creek SPS, Generator Running, Alarm
3762217	1313, Jennings Creek SPS, Generator Running, Alarm
3762218	1313, Jennings Creek SPS, Generator Running, Alarm
3762220	1313, Jennings Creek SPS, Generator Running, Alarm
3762228	1313, Lindsay WWTP, Actiflo #2, Fault
3762584	1313, Lindsay WWT, Actiflo 1 Fault
3762766	1313, Lindsay WWT, 2" Portable Pump, Repair
3762769	1313, Ridout SPS, Pump #1 & #2, Fault
3763330	1313, Lindsay WWT, Actiflo Training and Optimization
3764292	1313, Rivera Park SPS, Pump Fault
3764976	1313, Lindsay WWT, Valve Packing Leaking/Bolts Needs Tightening
3765180	1313, Lindsay WWT, Propane Heater, Garage, Repair
3767141	Alarm Dialer Testing (1m) - 1313 SPS - KTC
3767148	Blower Inspection (1m) - 1313 - KTC
3767381	Building and Grounds Maintenance (1m) - 1313 - KTC
3767383	Lindsay St N Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3767392	Central Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3767401	South Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3767422	Engine Diesel (1m) - 1313 Fairgounds SPS - KTC
3767441	Engine Diesel (1m) - 1313 Logie SPS - KTC
3767460	Engine Diesel (1m) - 1313 Riverview SPS - KTC
3767479	Engine Diesel (1m) - 1313 Jennings Creek SPS - KTC
3767498	Engine Diesel (1m) - 1313 Ridout SPS - KTC
3767517	Engine Diesel (1m) - 1313 Lindsay St N SPS - KTC
3767536	Engine Diesel (1m) - 1313 Main Plant - KTC
3767555	Gear Drive Insp/Service - (1m) - 1313 Inlet Grit Removal - KTC

3767561	UV Light Bank Cleaning & Insp. (1m) - 1313 UV Route - KTC
3769296	Tank Alum Inspection (1m) - 1313 - KTC
3769408	Pump Cent Insp/Service (1y) - 1313 Blower Pump #1 EP501 - KTC
3769416	Pump Cent Insp/Service (1y) - 1313 Blower Pump #2 EP502- KTC
3769424	Mixer Flocculator Insp/Service (1y) - 1313 Actiflo #1 MM501- KTC
3769432	Mixer Flocculator Insp/Service (1y) - 1313 Actiflo #2 MM502 - KTC
3781098	North Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3781209	Alarm Dialer Testing (1m) - 1313 Main Plant - KTC
3783189	Engine Gas Honda Portable - (1m) - 1313 Lindsay WWT Shop - KTC
3784509	Chemical Feed System Insp (1m) - 1313 - KTC
3784843	Engine Diesel (1m) - 1313 Rivera Park SPS - KTC
3785172	Lagoon Inspection (1m) - 1313 - KTC
3785308	HS03 H & S Equipment Check (1m) - 1313 - KTC
3787080	Operator PDM Entry & Review (1m) - 1313 - KTC
3787616	Corporate Facility Workplace H & S Inspection (1m) - 1313 - KTC
3802461	1313, Lindsay St North SPS, Pumping Station Pump #3, Repair
3802798	1313, Lindsay St N SPS, Pump 3 Fault, Alarm
3803520	1313, Lindsay WWT, Office Window, Replacement
3804431	1313, Lindsay WWT, Generator Combustion Louvers, Purchase
3804533	Analyzer DO Inspection (1m) - 1313 DO Analyzer Route - KTC
3804695	1313, Lindsay St North Leachate SPS, Refurbish Pump Control Board, Refurbish/Repair
3804716	1313, Lindsay WWT, Seperator Grit CY-520 Pump Fail, Duplicate
3804722	1313, Lindsay WWT, Seperator Grit CY-520, Pump Fail, Alarm
3804973	1313, Lindsay WWT, Actiflo Alum Room, Sump Pump, Replace
3804999	1313, Lindsay WWTP, Separator Grit CY-520, Recirculation Pump, Repair
3806104	1313, Lindsay WWT Lagoon Sludge Surveys
3806336	1313, Lindsay St North SPS, Transfer Switch LEDS Failure, Replace
3806885	1313, Lindsay WWT, Fly Pest Control,
3807075	1313, Lindsay WWT, EQ Fault, Alarm
3807189	1313, Ridout SPS, Generator Running
3807191	1313, Lindsay St. North SPS, Generator Running
3807198	1313, Lindsay WWT, EQ Milltronics, Alarm
3807275	1313, Lindsay WWT, Meter, Level, Spare
3808921	Alarm Dialer Testing (1m) - 1313 SPS - KTC
3808928	Blower Inspection (1m) - 1313 - KTC
3809147	Building and Grounds Maintenance (1m) - 1313 - KTC
3809149	Lindsay St N Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3809158	Central Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3809167	South Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3809188	Engine Diesel (1m) - 1313 Fairgounds SPS - KTC
3809207	Engine Diesel (1m) - 1313 Logie SPS - KTC
3809226	Engine Diesel (1m) - 1313 Riverview SPS - KTC
3809245	Engine Diesel (1m) - 1313 Jennings Creek SPS - KTC
3809264	Engine Diesel (1m) - 1313 Ridout SPS - KTC

3809283	Engine Diesel (1m) - 1313 Lindsay St N SPS - KTC
3809302	Engine Diesel (1m) - 1313 Main Plant - KTC
3809321	Gear Drive Insp/Service - (1m) - 1313 Inlet Grit Removal - KTC
3809327	UV Light Bank Cleaning & Insp. (1m) - 1313 UV Route - KTC
3811045	Compressor Air Insp/Service (1y) - 1313 - KTC
3811055	Gear Drive Service (1y) - 1313 - KTC
3811083	Tank Alum Inspection (1m) - 1313 - KTC
3811096	UV Light Cleaning & Insp. (1y) - 1313 - KTC
3811376	Heat Trace Inspection (6m) - 1313 - KTC
3811384	Mixer Flocculator Insp/Service (1y) - 1313 Actiflo #1 IM501 - KTC
3811392	Mixer Flocculator Insp/Service (1y) - 1313 Actiflo #2 IM502 - KTC
3811403	Pump Cent Insp/Service (1y) - 1313 Inlet Coagulant Transfer CTP201 - KTC
3811411	Pump Cent Insp/Service (1y) - 1313 Alum Transfer CTP701 - KTC
3811419	Pump Cent Insp/Service (1y) - 1313 Actiflo #2 Coagulant Transfer - KTC
3819731	UPS Insp/Service (1y) - 1313 - KTC
3823742	North Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3823929	Alarm Dialer Testing (1m) - 1313 Main Plant - KTC
3826696	Engine Gas Honda Portable - (1m) - 1313 Lindsay WWT Shop - KTC
3828086	Chemical Feed System Insp (1m) - 1313 - KTC
3828414	Engine Diesel (1m) - 1313 Rivera Park SPS - KTC
3828722	Lagoon Inspection (1m) - 1313 - KTC
3828877	HS03 H & S Equipment Check (1m) - 1313 - KTC
3830018	Odour Control Force Main Vent Filter Change (6m) - 1313 Jennings Creek SPS - KTC
3830597	Operator PDM Entry & Review (1m) - 1313 - KTC
3830868	Boiler System Water Treatment Service by Contractor (3m) - 1313 - KTC
3831197	Corporate Facility Workplace H & S Inspection (1m) - 1313 - KTC
3840086	Pump Cent Insp/Service (6m) - 1313 Ridout SPS - KTC
3847202	1313, Jennings Creek, SPS, Pump 1 & 2
3847608	1313, Lindsay WWTP, 2023 Annual Report Work
3848850	1313, Lindsay St North, Water Pipe, Repair
3848864	1313, Lindsay ST North, Water Main Shut Down
3848876	Analyzer DO Inspection (1m) - 1313 DO Analyzer Route - KTC
3849060	1313, Lindsay WWT, MECP Inspection
3849206	1313, Lindsay WWTP, Actiflo 1 Fault, Alarm
3849457	1313, Lindsay WWT, EQ PUMP FEP-101 Fault, Inspect/Replace
3849937	1313, Lindsay WWT, Process, Actiflo 2 Fault, Alarm
3850046	1313, Ridout SPS, Generator Block Heater Switch, Replacement
3850446	1313, Lindsay WWT, Actiflo RM, Kick Plate/Chain Barrier, Replacement
3850447	1313, Lindsay WWT, Actiflo/ UV Room, Emergence Lights Mount, Repair
3850768	1313, Ridout SPS, Pump 2 Fault, Alarm
3851309	1313, Mary SPS, Power Fail, Sewage Haulage
3851584	1313, Lindsay WWT, EQ Pump 1 VFD Display, Mount / Install
3851633	1313, Fairgrounds SPS, UPS "Open Cell Voltage" Alarm, Replace/Refurbish
3851638	1313, Wellington SPS, UPS Battery Alarm, Replace

3853570	Alarm Dialer Testing (1m) - 1313 SPS - KTC
3853577	Blower Inspection (1m) - 1313 - KTC
3853824	Building and Grounds Maintenance (1m) - 1313 - KTC
3853826	Lindsay St N Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3853835	Central Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3853844	South Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3853865	Engine Diesel (1m) - 1313 Fairgounds SPS - KTC
3853884	Engine Diesel (1m) - 1313 Logie SPS - KTC
3853903	Engine Diesel (1m) - 1313 Riverview SPS - KTC
3853922	Engine Diesel (1m) - 1313 Jennings Creek SPS - KTC
3853941	Engine Diesel (1m) - 1313 Ridout SPS - KTC
3853960	Engine Diesel (1m) - 1313 Lindsay St N SPS - KTC
3853979	Engine Diesel (1m) - 1313 Main Plant - KTC
3853998	Gear Drive Insp/Service - (1m) - 1313 Inlet Grit Removal - KTC
3854004	UV Light Bank Cleaning & Insp. (1m) - 1313 UV Route - KTC
3856009	Tank Alum Inspection (1m) - 1313 - KTC
3856303	FEP Site Plan Review (1y) - 1313 - KTC
3869549	Clarifier Arm Install/Remove (6m) - 1313 - KTC
3870292	North Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3870301	Pump Submersible Insp. (1y) - 1313 Leachate SPS - KTC
3870425	Alarm Dialer Testing (1m) - 1313 Main Plant - KTC
3874128	Engine Gas Honda Portable - (1m) - 1313 Lindsay WWT Shop - KTC
3875573	Chemical Feed System Insp (1m) - 1313 - KTC
3876024	Engine Diesel (1m) - 1313 Rivera Park SPS - KTC
3876048	Odour Control Fan Maintenance (3m) - 1313 Rivera Park SPS - KTC
3876307	Lagoon Inspection (1m) - 1313 - KTC
3876687	HS03 H & S Equipment Check (1m) - 1313 - KTC
3877350	Facility Window Cleaning by Contractor (1y) - 1313 - KTC
3878912	Operator PDM Entry & Review (1m) - 1313 - KTC
3879532	Corporate Facility Workplace H & S Inspection (1m) - 1313 - KTC
3889016	Pump Cent Insp/Service (1y) - 1313 Actiflo Recirc Pumps - KTC
3899925	1313, Lindsay WWT, Actiflo 2 Fault, Alarm
3900022	1313, Riverview SPS, Generator Running/Power Failure, Alarm
3900027	1313, Lindsay St North SPS, No Test Signal, Alarm
3900106	1313, Lindsay WWT, Bar Screen MBS201, Repair
3901306	1313, Lindsay St North, Generator Fault, Alarm
3901308	1313, Ridout SPS, Generator Starter Issue, Repair
3901445	Analyzer DO Inspection (1m) - 1313 DO Analyzer Route - KTC
3901557	1313, Lindsay St North, Water Pipe Leak, Repair
3901710	1313, Mary SPS, Power Failure, Alarm
3902156	1313, Ridout SPS, Pump 1 Fault, Investigate
3902253	1313, Ridout SPS, Pump Fault, Alarm
3902255	1313, Wellington SPS, Pump 2 Fault, Power Fail, Alarm
3902258	1313, River Park SPS, Pump Fault, Power Fail, Alarm

3902260	1313, Riverview SPS, Power Fail, Alarm
3902359	1313, Lindsay WWT, WAS Compressor, Air Filter, Change
3902364	1313, Lindsay WWT, Equalization and Actiflo 1&2 Fault, Alarm
3902366	1313, Lindsay WWTP, Polymer System, Cleaning
3902386	1313, Lindsay WWTP, Coagulant, Polymer Fault, Alarm
3902398	3902386
3902662	1313, Lindsay WWT, EQ Pit Ultrasonic Multiranger Fail, Replace
3902734	1313, Lindsay St. North SPS, Potable Water Line, Replacement
3904641	1313, Lindsay WWTP, Acitiflow High Flow, Alarm
3906267	Alarm Dialer Testing (1m) - 1313 SPS - KTC
3906274	Blower Inspection (1m) - 1313 - KTC
3906566	Building and Grounds Maintenance (1m) - 1313 - KTC
3906568	Lindsay St N Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3906577	Central Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3906586	South Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3906607	Engine Diesel (1m) - 1313 Fairgounds SPS - KTC
3906626	Engine Diesel (1m) - 1313 Logie SPS - KTC
3906645	Engine Diesel (1m) - 1313 Riverview SPS - KTC
3906664	Engine Diesel (1m) - 1313 Jennings Creek SPS - KTC
3906683	Engine Diesel (1m) - 1313 Ridout SPS - KTC
3906702	Engine Diesel (1m) - 1313 Lindsay St N SPS - KTC
3906721	Engine Diesel (1m) - 1313 Main Plant - KTC
3906740	Gear Drive Insp/Service - (1m) - 1313 Inlet Grit Removal - KTC
3906746	UV Light Bank Cleaning & Insp. (1m) - 1313 UV Route - KTC
3908438	MCC Panel Insp/Service (1y) - 1313 - KTC
3908441	Tank Alum Inspection (1m) - 1313 - KTC
3908628	Tank Wetwell Cleaning/Inspection (1y) - 1313 Fairgrounds SPS - KTC
3908643	Tank Wetwell Cleaning/Inspection (1y) - 1313 Logie SPS - KTC
3908658	Tank Wetwell Cleaning/Inspection (1y) - 1313 Riverview SPS - KTC
3911558	Tank Wetwell Cleaning/Inspection (1y) - 1313 Wellington SPS - KTC
3911573	Tank Wetwell Cleaning/Inspection (1y) - 1313 Jennings Creek SPS - KTC
3922544	North Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3922672	Alarm Dialer Testing (1m) - 1313 Main Plant - KTC
3925112	Air Conditioning Unit Service by Contractor (1y) - 1313 Main Plant & SPS - KTC
3925133	Engine Gas Honda Portable - (1m) - 1313 Lindsay WWT Shop - KTC
3925615	Tank Wetwell Cleaning/Inspection (1y) - 1313 Mary St SPS - KTC
3926904	Chemical Feed System Insp (1m) - 1313 - KTC
3927279	Tank Wetwell Cleaning/Inspection (1y) - 1313 Rivera Park SPS - KTC
3927294	Engine Diesel (1m) - 1313 Rivera Park SPS - KTC
3927574	Lagoon Inspection (1m) - 1313 - KTC
3927751	HS03 H & S Equipment Check (1m) - 1313 - KTC
3929569	Operator PDM Entry & Review (1m) - 1313 - KTC
3930141	Corporate Facility Workplace H & S Inspection (1m) - 1313 - KTC
3946811	1313, Ridout SPS, Exhausted Flap, Repair

3946814	1313 Wellington SPS, High Level Float, Repair
3949170	1313, Rivera Park SPS, Panel with DSC System, Replace
3949402	Analyzer DO Inspection (1m) - 1313 DO Analyzer Route - KTC
3949431	1313, Rivera Park SPS, Pump 4 Fault, Alarm
3949432	1313, Logie SPS, High Level, Alarm
3949673	1313, Ridout SPS, UPS Battery Alarm, Replace
3949811	1313, Rivera Park SPS, Pump 4 Fault, Investigate
3950988	1313, Lindsay WWT, WAS Pump 1 Failure, Investigate/Repair
3951353	1313, Lindsay WWT, Main Building, Central Air, Replace Compressor
3951705	1313, Mary SPS, Cellular Alarm Dialer, Replacement
3951706	1313, Logie SPS, Cellular Dialer, Replacement
3951708	1313, Riverview SPS, Cellular Dialer, Replacement
3952235	1313, Mary SPS, Pump 2, Pump Fault
3952371	1313, Fairgrounds SPS, Bell Line Repair
3954684	Alarm Dialer Testing (1m) - 1313 SPS - KTC
3954691	Blower Inspection (1m) - 1313 - KTC
3955020	Building and Grounds Maintenance (1m) - 1313 - KTC
3955022	Lindsay St N Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3955031	Central Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3955040	South Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3955061	Engine Diesel (1m) - 1313 Fairgounds SPS - KTC
3955080	Engine Diesel (1m) - 1313 Logie SPS - KTC
3955099	Engine Diesel (1m) - 1313 Riverview SPS - KTC
3955118	Engine Diesel (1m) - 1313 Jennings Creek SPS - KTC
3955137	Engine Diesel (1m) - 1313 Ridout SPS - KTC
3955156	Engine Diesel (1m) - 1313 Lindsay St N SPS - KTC
3955175	Engine Diesel (1m) - 1313 Main Plant - KTC
3955194	Gear Drive Insp/Service - (1m) - 1313 Inlet Grit Removal - KTC
3955200	UV Light Bank Cleaning & Insp. (1m) - 1313 UV Route - KTC
3956842	Tank Alum Inspection (1m) - 1313 - KTC
3957086	Lindsay St N Leachate SPS Pump Check/Insp (6m) - 1313 - KTC
3970644	North Leachate SPS Monitor/Insp (1m) - 1313 - KTC
3970822	Alarm Dialer Testing (1m) - 1313 Main Plant - KTC
3973501	Engine Gas Honda Portable - (1m) - 1313 Lindsay WWT Shop - KTC
3976234	Chemical Feed System Insp (1m) - 1313 - KTC
3976646	Engine Diesel (1m) - 1313 Rivera Park SPS - KTC
3977108	Lagoon Inspection (1m) - 1313 - KTC
3977335	HS03 H & S Equipment Check (1m) - 1313 - KTC
3977458	Building Overhead Door Inspection/Service (1y) - 1313 - KTC
3979171	Operator PDM Entry & Review (1m) - 1313 - KTC
3979449	Boiler System Water Treatment Service by Contractor (3m) - 1313 - KTC
3979793	Corporate Facility Workplace H & S Inspection (1m) - 1313 - KTC
3996961	1313, Lindsay WWT, Emergency Light, Repair
3997165	1313, Logie SPS, Low and High Level, Alarm

3997819	1313, Mary SPS, Power Failure, Alarm
3998546	1313, Lindsay WWTP, Splitter Box, Cleaning
3998849	1313, Lindsay WWT, Alarm Panel, Replacement
3998850	1313, Jennings Creek SPS, Alarm Panel, Replacement
3998997	Analyzer DO Inspection (1m) - 1313 DO Analyzer Route - KTC
3999035	1313, Jennings Creek SPS, Engine Diesel Generator, Repair
3999180	1313, Lindsay WWT, Inlet Building, Sludge Room, Ventilation Motor, Replace
3999302	1313, Mary SPS, Pump 2, Fuse, Replace
3999760	1313, Mary St SPS, Pump #2 Fault, Alarm
3999761	1313, Lindsay WWTP, Actiflo #1 & #2 Fault, Alarm
3999769	1313, Rivera Park SPS, No Test Signal, Alarm
3999771	1313, Rivera Park SPS, No Test Signal, Alarm
4000020	1313, Jennings Creek SPS, Alarm Dialer, Not Communicating
4000116	1313, Lindsay WWTP, Actiflo #2 Fault, Alarm
4000197	1313, Ridout SPS, Pump 1 Fail, Alarm
4000626	1313, Wellington SPS, Pump Submersible 1, Discharge 1/2" Ball Valve, Replace
4000652	1313, Fairgrounds SPS, No Test Signal, Alarm
4000653	1313, Rivera Park SPS, Odor Control Room, High Temp
4000655	1313, Ridout SPS, No Test Signal
4000656	1313, Lindsay WWT, No Test Signal
4000658	1313, Fairgrounds SPS, Generator Fault, Alarm
4000677	1313, Lindsay WWT, RAS Pump 2, Fault
4000708	1313, Lindsay WWT, South Clarifier, Weirs, Cleaning
4000709	1313, Lindsay WWT, Daylight Lagoon 2 & 4 WAS Valves
4000734	1313, Lindsay WWT, Seperator Grit CY-520 Hydrocyclone 520, Rebuild
4000946	1313, Lindsay WWT, Lagoon 3 Transfer
4000979	1313, Lindsay WWT, Actiflo 1, Fault
4001186	1313, Lindsay WWT, Actiflo 1, Fault
4001189	1313, Lindsay WWT, Coagulant/Polymer, Fault
4001230	1313, Logie SPS, MIltronics Display Fail, Power Reset
4001346	1313, Lindsay WWT, Environment Canada Inspection
4001463	1313, Lindsay WWT Lagoon Berm Clearing
4001703	1313, Lindsay WWT, Hydrocyclone Actiflo 1&2, Rebuild
4002009	1313, Lindsay WWT, Inlet Emergency Lights, Investigate
4002013	1313, Lindsay WWT, Exterior Light Failure, Investigate
4004331	Alarm Dialer Testing (1m) - 1313 SPS - KTC
4004338	Blower Inspection (1m) - 1313 - KTC
4004594	Building and Grounds Maintenance (1m) - 1313 - KTC
4004596	Lindsay St N Leachate SPS Monitor/Insp (1m) - 1313 - KTC
4004605	Central Leachate SPS Monitor/Insp (1m) - 1313 - KTC
4004614	South Leachate SPS Monitor/Insp (1m) - 1313 - KTC
4004635	Engine Diesel (1m) - 1313 Fairgounds SPS - KTC
4004654	Engine Diesel (1m) - 1313 Logie SPS - KTC
4004673	Engine Diesel (1m) - 1313 Riverview SPS - KTC

4004692	Engine Diesel (1m) - 1313 Jennings Creek SPS - KTC
4004711	Engine Diesel (1m) - 1313 Ridout SPS - KTC
4004730	Engine Diesel (1m) - 1313 Lindsay St N SPS - KTC
4004749	Engine Diesel (1m) - 1313 Main Plant - KTC
4004768	Gear Drive Insp/Service - (1m) - 1313 Inlet Grit Removal - KTC
4004774	UV Light Bank Cleaning & Insp. (1m) - 1313 UV Route - KTC
4006695	Tank Alum Inspection (1m) - 1313 - KTC
4006952	Pump Cent Insp/Service (6m) - 1313 Clarifier #1 RASP401 - KTC
4006960	Pump Cent Insp/Service (6m) - 1313 Clarifier #2 RASP402 - KTC
4006968	Pump Cent Insp/Service (6m) - 1313 WASP401 - KTC
4019073	North Leachate SPS Monitor/Insp (1m) - 1313 - KTC
4019203	Alarm Dialer Testing (1m) - 1313 Main Plant - KTC
4021853	Engine Gas Honda Portable - (1m) - 1313 Lindsay WWT Shop - KTC
4023673	Chemical Feed System Insp (1m) - 1313 - KTC
4024056	Engine Diesel (1m) - 1313 Rivera Park SPS - KTC
4024080	Odour Control Fan Maintenance (3m) - 1313 Rivera Park SPS - KTC
4024360	Lagoon Inspection (1m) - 1313 - KTC
4024700	HS03 H & S Equipment Check (1m) - 1313 - KTC
4026700	Operator PDM Entry & Review (1m) - 1313 - KTC
4027224	Corporate Facility Workplace H & S Inspection (1m) - 1313 - KTC
4046263	1313, Lindsay WWT, Actiflo 1, Seperator Grit, CY-511 Hydrocyclone, Rebuild
4046264	1313, Lindsay WWT, Actiflo 1, Grit Seperator, CY-510 Hydrocyclone, Rebuild
4046308	1313, Lindsay WWT, Actiflo #1, High Flow, Alarm
4046322	1313, Jennings Creek SPS, Pump #1 Fault, Alarm
4046647	1313, Lindsay WWT, Generator Run Damper Fault, Investigate/Repair
4048370	1313, Lindsay WWT, AC Unit, Main Building, MCC Room, Replace
4048593	Analyzer DO Inspection (1m) - 1313 DO Analyzer Route - KTC
4049333	1313, Ridout SPS, LPT AC Power Failure Alarm
4049435	1313, Fairgrounds SPS, Generator Fault, Alarm
4049438	1313, Ridout SPS, Generator Running / Pump 1 and 3 Fault, Alarm
4050000	1313, Jennings Creek SPS, Improper Burglar Alarm In MCC Room, Repair
4050666	1313, Mary SPS, Low Level, Alarm
4051002	1313, Lindsay WWT, Metcan Grit Removal, Water Solenoid, Replace
4051146	1313, Lindsay WWT, Actiflo 2 Fault
4052001	1313, Lindsay WWTP, Solids Discharge Bin Lagoon, Install
4052213	1313, Lindsay WWT, Clarifier 1, Scum Box, Plugged, Flush Line
4052214	1313, Lindsay WWT, Aeration Tank 1, Anoxic Zone, Scum Cleaning
4052215	1313, Lindsay WWT, Aeration Tank 2, Anoxic Zone, Cleaning
4052217	1313, Lindsay WWT, South Clarifier, Weir Cleaning
4053772	Alarm Dialer Testing (1m) - 1313 SPS - KTC
4053779	Blower Inspection (1m) - 1313 - KTC
4054021	Building and Grounds Maintenance (1m) - 1313 - KTC
4054032	Central Leachate SPS Monitor/Insp (1m) - 1313 - KTC
4054041	South Leachate SPS Monitor/Insp (1m) - 1313 - KTC

4054062	Engine Diesel (1m) - 1313 Fairgounds SPS - KTC
4054081	Engine Diesel (1m) - 1313 Logie SPS - KTC
4054100	Engine Diesel (1m) - 1313 Riverview SPS - KTC
4054119	Engine Diesel (1m) - 1313 Jennings Creek SPS - KTC
4054138	Engine Diesel (1m) - 1313 Ridout SPS - KTC
4054157	Engine Diesel (1m) - 1313 Lindsay St N SPS - KTC
4054176	Engine Diesel (1m) - 1313 Main Plant - KTC
4054195	Gear Drive Insp/Service - (1m) - 1313 Inlet Grit Removal - KTC
4054201	UV Light Bank Cleaning & Insp. (1m) - 1313 UV Route - KTC
4055950	Tank Alum Inspection (1m) - 1313 - KTC
4056052	Panel Transfer Insp. (1y) - 1313 Generator - KTC
4067075	Building Eavestrough Inspection/Cleaning (1y) - 1313 - KTC
4067456	North Leachate SPS Monitor/Insp (1m) - 1313 - KTC
4067567	Alarm Dialer Testing (1m) - 1313 Main Plant - KTC
4069639	Drive VFD Inspection (1y) - 1313 Route - KTC
4069787	Engine Gas Honda Portable - (1m) - 1313 Lindsay WWT Shop - KTC
4071736	Chemical Feed System Insp (1m) - 1313 - KTC
4072057	Engine Diesel (1m) - 1313 Rivera Park SPS - KTC
4072325	Lagoon Inspection (1m) - 1313 - KTC
4072476	HS03 H & S Equipment Check (1m) - 1313 - KTC
4074120	Operator PDM Entry & Review (1m) - 1313 - KTC
4074654	Corporate Facility Workplace H & S Inspection (1m) - 1313 - KTC
4092117	1313, Wellington SPS, Loss of Communication, Alarm
4092122	1313, Jennings Creek SPS, Loss of Communication, Alarm
4092123	1313, Riverview SPS, Loss Of Communication, Alarm
4092126	1313, Logie SPS, Loss Of Communication, Alarm
4092332	1313, North Leachate SPS, Raw Sewage Pump #2 fault, Investigate/Repair
4093023	1313, Ridout SPS, Temporary Generator, Install
4093028	1313, Ridout SPS, Pump 2 Fault, Alarm
4093231	Analyzer DO Inspection (1m) - 1313 DO Analyzer Route - KTC
4093824	1313, Mary SPS, Flow Mitigation
4094144	1313, Lindsay St North Leachate, Bypass, Repair
4094193	1313, Wellington SPS, Fencing Barbwire, Repair
4094706	1313, Lindsay WWTP, Clarifier 2 RAS Pump Fault, Alarm
4094708	1313, Lindsay WWTP, Fairgrounds SPS Generator Fault, Alarm
4095986	1313, Mary SPS, Pump Fault
4095991	1313, Lindsay WWT, Internet upgrade, Upgrade
4096620	1313, Lindsay WWT, North Clarifier, Tank, Cleaning
4096627	1313, The Lindsay WWT, Actiflo 1, Hi Hi Flow
4098127	Blower Inspection (1m) - 1313 - KTC
4098346	Building and Grounds Maintenance (1m) - 1313 - KTC
4098348	Lindsay St N Leachate SPS Monitor/Insp (1m) - 1313 - KTC
4098357	Central Leachate SPS Monitor/Insp (1m) - 1313 - KTC
4098366	South Leachate SPS Monitor/Insp (1m) - 1313 - KTC

4098387	Engine Diesel (1m) - 1313 Fairgounds SPS - KTC
4098425	Engine Diesel (1m) - 1313 Riverview SPS - KTC
4098444	Engine Diesel (1m) - 1313 Jennings Creek SPS - KTC
4098463	Engine Diesel (1m) - 1313 Ridout SPS - KTC
4098482	Engine Diesel (1m) - 1313 Lindsay St N SPS - KTC
4098501	Engine Diesel (1m) - 1313 Main Plant - KTC
4098520	Gear Drive Insp/Service - (1m) - 1313 Inlet Grit Removal - KTC
4098526	UV Light Bank Cleaning & Insp. (1m) - 1313 UV Route - KTC
4100191	Harmonic Filter Insp/Service (1y) - 1313 Jennings Creek SPS - KTC
4100193	Tank Alum Inspection (1m) - 1313 - KTC
4100582	HS09 Chemical Review (1y) - 1313 - KTC
4100601	Heat Trace Inspection (6m) - 1313 - KTC
4113837	North Leachate SPS Monitor/Insp (1m) - 1313 - KTC
4113971	Heater Unit Inspection (1y) - 1313 SPS Route - KTC
4113975	Alarm Dialer Testing (1m) - 1313 Main Plant - KTC
4116451	Engine Gas Honda Portable - (1m) - 1313 Lindsay WWT Shop - KTC
4118916	Chemical Feed System Insp (1m) - 1313 - KTC
4119344	Engine Diesel (1m) - 1313 Rivera Park SPS - KTC
4119683	Lagoon Inspection (1m) - 1313 - KTC
4119900	HS03 H & S Equipment Check (1m) - 1313 - KTC
4121139	Odour Control Force Main Vent Filter Change (6m) - 1313 Jennings Creek SPS - KTC
4121837	Operator PDM Entry & Review (1m) - 1313 - KTC
4122056	Boiler System Water Treatment Service by Contractor (3m) - 1313 - KTC
4122363	Corporate Facility Workplace H & S Inspection (1m) - 1313 - KTC
4132497	Pump Cent Insp/Service (6m) - 1313 Ridout SPS - KTC
4141293	1313, Jennings Creek SPS, High Level, Alarm
4141294	1313, Mary SPS, High Level, Alarm
4141298	1313, Lindsay WWT, Actiflo 2 Fault, Alarm
4141977	Engine Diesel Inspection/Service by Contractor (1y) - 1313 Lindsay St N SPS - KTC
4141989	Engine Diesel Inspection/Service by Contractor (1y) - 1313 Ridout SPS - KTC
4142037	1313, Lindsay WWT, Clear Lagoon Culverts
4143064	1313, Lindsay WWT, Actiflo 1 Fault
4143079	1313, Lindsay WWT, Polymer Carry Water Solenoid Failure Train 2, Replace
4143356	Transformer Inspection/Maintenance by Contractor (2y) - 1313 Main Plant - KTC
4143427	Analyzer DO Inspection (1m) - 1313 DO Analyzer Route - KTC
4143503	1313, Lindsay St. N, Phone Line, Repair
4143519	1313, Lindsay WWT, Actiflo Air Scour, Upgrade
4143577	1313, Lindsay St North SPS, Bluetooth Alarm (High Level), Investigate/Repair
4143585	1313, Lindsay WWT, Actiflo Emergency Light Broken, Repair/Replace
4143705	1313, Lindsay St North SPS, Bluetooth, Alarm
4144596	1313, Jennings Creek SPS, Generator Running, Alarm
4144600	1313, Jennings Creek SPS, Generator Fault, Alarm
4145019	1313, Fairgrounds SPS, Heat Sensor and Fire Zones Active, Investigate/Repair
4145037	1313, Lindsay WWT, Isolation Valve, Installation, Process Water for Metcan

4146037	6670, Victoria Place WT, UV Fault
4146060	1313, Lindsay WWT, MCC emergency light failure, Investigate/Repair
4148602	Alarm Dialer Testing (1m) - 1313 SPS - KTC
4148609	Blower Inspection (1m) - 1313 - KTC
4148879	Building and Grounds Maintenance (1m) - 1313 - KTC
4148881	Lindsay St N Leachate SPS Monitor/Insp (1m) - 1313 - KTC
4148890	Central Leachate SPS Monitor/Insp (1m) - 1313 - KTC
4148899	South Leachate SPS Monitor/Insp (1m) - 1313 - KTC
4148920	Engine Diesel (1m) - 1313 Fairgounds SPS - KTC
4148939	Engine Diesel (1m) - 1313 Logie SPS - KTC
4148958	Engine Diesel (1m) - 1313 Riverview SPS - KTC
4148977	Engine Diesel (1m) - 1313 Jennings Creek SPS - KTC
4148996	Engine Diesel (1m) - 1313 Ridout SPS - KTC
4149015	Engine Diesel (1m) - 1313 Lindsay St N SPS - KTC
4149034	Engine Diesel (1m) - 1313 Main Plant - KTC
4149053	Gear Drive Insp/Service - (1m) - 1313 Inlet Grit Removal - KTC
4149059	UV Light Bank Cleaning & Insp. (1m) - 1313 UV Route - KTC
4151026	Tank Alum Inspection (1m) - 1313 - KTC
4163659	North Leachate SPS Monitor/Insp (1m) - 1313 - KTC
4163774	Alarm Dialer Testing (1m) - 1313 Main Plant - KTC
4167038	Engine Gas Honda Portable - (1m) - 1313 Lindsay WWT Shop - KTC
4168681	Chemical Feed System Insp (1m) - 1313 - KTC
4169383	Engine Diesel (1m) - 1313 Rivera Park SPS - KTC
4169407	Odour Control Fan Maintenance (3m) - 1313 Rivera Park SPS - KTC
4169720	Pump Diaphragm Inspection/Service (1y) - 1313 - KTC
4169752	Lagoon Inspection (1m) - 1313 - KTC
4170064	HS03 H & S Equipment Check (1m) - 1313 - KTC
4172241	Operator PDM Entry & Review (1m) - 1313 - KTC
4172829	Corporate Facility Workplace H & S Inspection (1m) - 1313 - KTC
4179800	1313, Lindsay WWT, UV Fault, Alarm
4180363	1313, Lindsay WWT, UV Fault, Alarm
4180851	1313, Lindsay WWT, UV Fault, Alarm
4192086	1313, Lindsay WWTP, Burglary Inlet Building, Alarm
4192502	1313, Lindsay WWT, UV Light Bank1 Module 3 Fault, Alarm
4192777	1313, Lindsay St. North SPS, Transformer, Compound Vegetation, Removal
4192985	1313, Lindsay WWT, Metcan Grit Separator, Piping Repair
4193774	1313, Lindsay WT, Clarifier RAS Pump Fault, Alarm
4193891	Analyzer DO Inspection (1m) - 1313 DO Analyzer Route - KTC
4193972	1313, Mary SPS, Pump 2 Fault, Alarm
4194644	1313, Jennings Creek SPS, Generator Running, Alarm
4195108	1313, Jennings Creek SPS, Pump #1 & #2 Fault
4195119	6665, Manorview WT, Actiflo #1 Fault/Coagulant/Polymer Fault, Alarm
4195384	1313, Lindsay WWT, Clarifier 2 RAS Low Low, Alarm
4195459	1313, Wellington SPS, Power Failure, Alarm

4195460	1313, Lindsay WWTP, Clarifier 2 RAS Pump Fault, Alarm
4195464	1313, Lindsay St N SPS, Generator Running, Alarm
4195466	1313, Riverview SPS, Generator Running/Fault, Alarm
4195472	1313, Rivera Park SPS, Generator Running/Com Fail, Alarm
4195513	1313, Wellington SPS, Power Transfer, Alarm
4195698	1313, Lindsay WWT, UV Fail, Alarm
4196683	1313, Fairgrounds SPS, Low Temperature, Alarm
4196903	1313, Lindsay WWT, Propane Furnace # 2, Repair
4197010	1313, Lindsay WWT, Backflow Preventer, Inlet Building, Metcan Process Water, Replace
4197021	1313, Lindsay WWT, Actiflo Actuator Failure BFV501, Investigate/Replace
4199354	Gear Drive Insp/Service - (1m) - 1313 Inlet Grit Removal - KTC
4207254	Pump Cent Insp/Service (1y) - 1313 Actiflo Recirc Pumps - KTC
4214284	Engine Gas Honda Portable - (1m) - 1313 Lindsay WWT Shop - KTC
4216562	Lagoon Inspection (1m) - 1313 - KTC
4216929	Grit Chamber Clean-out/Inspection by Contractor (1y) - 1313 - KTC
4218328	Operator PDM Entry & Review (1m) - 1313 - KTC
4223255	1313, Logie SPS, Generator Run/Power Fail, Trouble, Alarm
4224063	1313, Logie SPS, Generator Run/Power Fail, Trouble, Alarm
4225659	1313, Lindsay WWT, Scum Pit, Cleanout
4235514	1313, Logie SPS, High Level, Alarm
4235516	1313, Jennings Creek SPS, Pump 3 Fault, Alarm
4236915	1313, Lindsay WWT, Actiflo Actuator Electric BFV501
4237007	1313, Lindsay WWT, Basement Sump Pump not Turning off, Investigate/Repair
4241339	UV Light Bank Cleaning & Insp. (1m) - 1313 UV Route - KTC

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Appendix IV:
Calibration Reports

Franklin Empire
550 Braidwood Ave. Unit 4
Peterborough ON K9J 1W1, CANADA

Tel: (705) 745-1626
Fax: (705) 745-3493

OCWA Kawartha Lindsay WWTP

2024 Flow Calibrations

CALIBRATION REPORT

Report No.:	LINDSWW 24 FIT-501
Date:	04-Dec-24

SITE:	Lindsay WWTP	**SERVICE DATE:**	December 4, 2024
PROCESS AREA:	Actiflo 1	**TECHNICIAN:**	M Manley
INSTR. TAG:	FIT-501	**JOB REFERENCE:**	LINDSWW 24
MANUFACTURER:	Krohne		
MODEL:	IFC 090		
SERIAL No.:	A98 18896		
INSTR. RANGE:	0000423853		

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**	
Type:	GS 8 (X val)		**Type or EGU:**	mA	l/s	m3/day
Min:	0.00		**Min:**	4.00	0.00	
Max:	2.15		**Max:**	20.00	373.30	32250.00
DN (mm):	450	18				
GK=1 GKL=2	1			coil	118.8 ohms	
GK:	3.589			open to ground		
Constant:	4177.44					

			Before Calibration		**After Calibration**	
Input (Y pos)	**Knob Setting**	**Calc. O/P (mA)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.00	0	4.00	4.00	0.00%	4.00	0.00%
0.50	A	7.73	7.72	-0.13%	7.76	0.39%
1.00	B	11.46	11.45	-0.09%	11.44	-0.17%
2.00	C	18.91	18.89	-0.11%	18.90	-0.05%

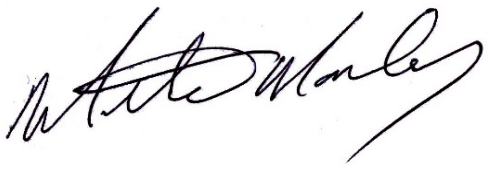
Calibration Equipment			
Type:	DMM	Simulator	
Manufacturer:	Fluke	Krohne	
2018 Flow Calibrat	Model 87	GS 8B	
Serial No.:	13440128	U1127700020705	
Last Cal. Date:	Feb. 16, 2024	Mar. 26, 2024	

Comments:

Total 43.019 E6m3

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:



CALIBRATION REPORT

Report No.: LINDSWW 24 FIT-502

Date: 04-Dec-24

SITE:	Lindsay WWTP	**SERVICE DATE:**	December 4, 2024
PROCESS AREA:	Actiflo 2	**TECHNICIAN:**	M Manley
INSTR. TAG:	FIT-502	**JOB REFERENCE:**	LINDSWW 24
MANUFACTURER:	Krohne		
MODEL:	IFC 090		
SERIAL No.:	A98 18895		
INSTR. RANGE:	0000423852		

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**	
Type:	GS 8 (X val)		**Type or EGU:**	mA	l/s	m3/day
Min:	0.00		**Min:**	4.00	0.00	
Max:	2.17		**Max:**	20.00	373.30	32250.00
DN (mm):	450	18				
GK=1 GKL=2	1			coil	118.4 ohms	
GK:	3.548			open to ground		
Constant:	4177.44					

			Before Calibration		**After Calibration**	
Input (Y pos)	**Knob Setting**	**Calc. O/P (mA)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.00	0	4.00	4.00	0.00%	4.00	0.00%
0.50	A	7.69	7.66	-0.39%	7.66	-0.39%
1.00	B	11.37	11.34	-0.26%	11.34	-0.26%
2.00	C	18.74	18.67	-0.37%	18.67	-0.37%

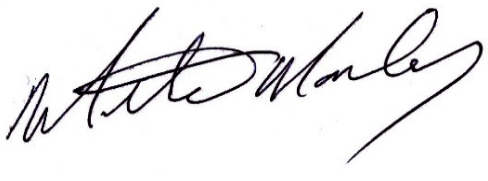
Calibration Equipment			
Type:	DMM	Simulator	
Manufacturer:	Fluke	Krohne	
2018 Flow Calibrat	Model 87	GS 8B	
Serial No.:	13440128	U1127700020705	
Last Cal. Date:	Feb. 16, 2024	Mar. 26, 2024	

Comments:

44.440 E6 m3

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:



CALIBRATION REPORT

Report No.: LINDSWW 24 FIT-101

Date: Dec. 3, 2024

SITE:	Lindsay WWTP
PROCESS AREA:	Middle Leachate
	FIT-101
MANUFACTURER:	Krohne
MODEL:	IFC 090
SERIAL No.:	A03 29326
INSTR. RANGE:	0000423619

SERVICE DATE:	Dec. 3, 2024
TECHNICIAN:	M Manley
JOB REFERENCE:	LINDSWW 24

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**
Type:	GS 8 (X val)		**Type or EGU:**	mA	l/s
Min:	0.00		**Min:**	4.00	0.00
Max:	6.67		**Max:**	20.00	25.00
DN (mm):	80	3 inch			
GK=1 GKL=2	1			coil	62.0 ohms
GK:	2.445			open to ground	
Constant:	4177.44				

			Before Calibration		**After Calibration**	
Input (Y pos)	**Knob Setting**	**Calc. O/P (mA)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.00	0	4.00	4.01	0.25%	4.01	0.00%
0.50	A	5.20	5.21	0.19%	5.21	0.19%
1.00	B	6.40	6.41	0.16%	6.41	0.16%
2.00	C	8.79	8.77	-0.23%	8.77	-0.23%
5.00	D	15.99	15.98	-0.06%	15.98	-0.06%

Calibration Equipment			
Type:	DMM	Simulator	
Manufacturer:	Fluke	Krohne	
2018 Flow Calibrat	Model 87	GS 8B	
Serial No.:	13440128	U1127700020705	
Last Cal. Date:	Feb. 16, 2024	Mar. 26, 2024	

Comments: In Panel outside, fuse marked on instrument. (CB#8 3rd from right) (mA input 2 on RCI 800)

226680m3

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:

CALIBRATION REPORT

Report No.:	LINDSWW 24 FIT-201
Date:	04-Dec-24

SITE:	Lindsay WWTP	**SERVICE DATE:**	December 4, 2024
PROCESS AREA:	South Leachate		
	FIT-201	**TECHNICIAN:**	M Manley
MANUFACTURER:	Krohne		
MODEL:	IFC100	**JOB REFERENCE:**	LINDSWW 24
SERIAL No.:	S15302427		
INSTR. RANGE:	0000423730		

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**
Type:	GS 8 (X val)		**Type or EGU:**	mA	l/s
Min:	0.00		**Min:**	4.00	0.00
Max:	2.74		**Max:**	20.00	10.00
DN (mm):	80	3 inch			
GK=1 GKL=2	2			coil	62.0 ohms
GK:	4.757			open to ground	open
Constant:	4177.44				

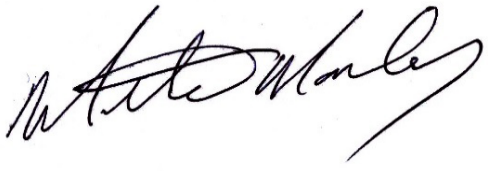
			Before Calibration		**After Calibration**	
Input (Y pos)	**Knob Setting**	**Calc. O/P (mA)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.00	0	4.00	4.00	0.00%	4.00	-0.25%
0.50	A	6.92	6.91	-0.14%	6.91	-0.14%
1.00	B	9.83	9.83	0.00%	9.83	0.00%
2.00	C	15.66	15.68	0.13%	15.68	0.13%
5.00	D	33.15				
10.00	E	62.31				

Calibration Equipment			
Type:	DMM	Simulator	
Manufacturer:	Fluke	Krohne	
2018 Flow Calibrat	Model 87	GS 8B	
Serial No.:	13440128	U1127700020705	
Last Cal. Date:	Feb. 16, 2024	Mar. 26, 2024	

Comments: Total AF 143432.9 m3
S78 123S
SWB SRWS

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:



CALIBRATION REPORT

Report No.:	LINDSWW 24 FIT-203
Date:	04-Dec-24

SITE:	Lindsay WWTP	**SERVICE DATE:**	December 4, 2024
PROCESS AREA:	North / Middle Leachate	**TECHNICIAN:**	M Manley
INSTR. TAG:	FIT-203	**JOB REFERENCE:**	LINDSWW 24
MANUFACTURER:	Krohne		
MODEL:	IFC 090		
SERIAL No.:	A03 21903		
INSTR. RANGE:	0000422119		

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**
Type:	GS 8 (X val)		**Type or EGU:**	mA	l/s
Min:	0.00		**Min:**	4.00	0.00
Max:	15.22		**Max:**	20.00	90.00
DN (mm):	100	4			
GK=1 GKL=2	1			coil	103.5 ohms
GK:	2.470			open to ground	
Constant:	4177.44				

			Before Calibration		**After Calibration**	
Input (Y pos)	**Knob Setting**	**Calc. O/P (mA)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.00	0	4.00	4.00	0.00%	4.00	0.00%
0.50	A	4.53	4.52	-0.22%	4.52	-0.22%
1.00	B	5.05	5.05	0.00%	5.05	0.00%
2.00	C	6.10	6.10	0.00%	6.10	0.00%
5.00	D	9.26	9.23	-0.32%	9.23	-0.32%
10.00	E	14.51	14.46	-0.34%	14.46	-0.34%

Calibration Equipment			
Type:	DMM	Simulator	
Manufacturer:	Fluke	Krohne	
2018 Flow Calibrat	Model 87	GS 8B	
Serial No.:	13440128	U1127700020705	
Last Cal. Date:	Feb. 16, 2024	Mar. 26, 2024	

Comments:

Display cycles 2Xper second and pushbuttons not working.
Noisy signal, somewhat erratic, Consider replacement.

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:



CALIBRATION REPORT

Report No.:	LINDSWW 24 FIT-202
Date:	Dec. 5, 2024

SITE:	Lindsay WW	**SERVICE DATE:**	Dec. 5, 2024
PROCESS AREA:	Reject		
INSTR. TAG:	FIT-202	**TECHNICIAN:**	M Manley
MANUFACTURER:	Greyline Transit Time		
MODEL:	TTFM 1.0	**JOB REFERENCE:**	LINDSWW 24
SERIAL No.:	53787		
Type:	0000423880		

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**	
Type:	Simulation		**Type or EGU:**	mA	m3/day	m3/hr
Min:	0		**Min:**	4.00	0	0
Max:	25920		**Max:**	20.00	25920.000	1080
Pipe OD:	12.75					
Sensor Spacing:	4.5 inch	1 Pass				
Material:	Stainless Steel					

			Before Calibration		**After Calibration**	
Input	**Input %**	**Calc. m3/day**	**Output**	**%Error**	**Output**	**%Error**
0			0		0	
630		630	620	-1.59%	620	-1.59%
Simulation	**Input %**	**Calc. mA**	**Output**	**%Error**	**Output**	**%Error**

Calibration Equipment			
Type:	DMM	Clamp-on Transit time Flowmeter	
Manufacturer:	Fluke	Siemens	
2018 Flow Calibrat	Model 87	FUP1010	
Serial No.:	13440128	Service	
Last Cal. Date:	Feb. 16, 2024		

Comments:

Unsteady flow but seemed to compare with our clamp flowmeter, flow surged from 200 - 1000 m3/d
correction factor 1.00

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:



CALIBRATION REPORT

Report No.: LINDSWW 24 FIT-101

Date: Dec. 3, 2024

SITE:	Lindsay WWTP	**SERVICE DATE:**	Dec. 3, 2024
PROCESS AREA:	Ridout SPS		
INSTR. TAG:	FIT-101	**TECHNICIAN:**	M Manley
MANUFACTURER:	Krohne		
MODEL:	IFC 020D	**JOB REFERENCE:**	LINDSWW 24
SERIAL No.:	A0246587		
INSTR. RANGE:	0000422553		

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**	
Type:	GS 8 (X val)		**Type or EGU:**	mA	l/s	m3/day
Min:	0.00		**Min:**	4.00	0.00	
Max:	7.31		**Max:**	20.00	450.00	
DN (mm):	300	12				
GK=1 GKL=2	1			coil	100.8 ohms	
GK:	2.856			open to ground		
Constant:	4177.44					

			Before Calibration		**After Calibration**	
Input (Y pos)	**Knob Setting**	**Calc. O/P (mA)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.00	0	4.00	3.99	-0.25%	3.99	0.00%
0.50	A	5.09	5.04	-0.98%	5.04	-0.98%
1.00	B	6.19	6.11	-1.29%	6.11	-1.29%
2.00	C	8.38	8.28	-1.19%	8.28	-1.19%
5.00	D	14.94	14.75	-1.27%	14.75	-1.27%
10.00	E	25.88				

Calibration Equipment			
Type:	DMM	Simulator	
Manufacturer:	Fluke	Krohne	
2018 Flow Calibrat	Model 87	GS 8B	
Serial No.:	13440128	U1127700020705	
Last Cal. Date:	Feb. 16, 2024	Mar. 26, 2024	

Comments: Total 1324782

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:



CALIBRATION REPORT

Report No.: LINDSWW 24 FIT-W SPS

Date: Dec. 3, 2024

SITE:	Lindsay WW Wellington SPS	**SERVICE DATE:**	Dec. 3, 2024
PROCESS AREA:	Wellington SPS		
INSTR. TAG:	FIT-W SPS	**TECHNICIAN:**	M Manley
MANUFACTURER:	Greyline Doppler		
MODEL:	DFM-IV	**JOB REFERENCE:**	LINDSWW 24
SERIAL No.:	20450		
Type:	0000422219		

Input	**(Test)**	**Output**	**(Signal)**	**(Process)**	
Type:	Simulation	**Type or EGU:**	mA	m3/s	m3/day
Min:	0.00	**Min:**	4.00	0	0
Max:	0.024	**Max:**	20.00	0.024	2074
Pipe ID:	3.96				
Material:	Cast Iron				

			Before Calibration		**After Calibration**	
Input	**Input %**	**Calc. m3/day**	**Output**	**%Error**	**Output**	**%Error**
Simulation	**Input %**	**Calc. mA**	**Output**	**%Error**	**Output**	**%Error**
0.000	0.00%	4.00	4.01		4.01	
0.006	25.00%	8.00	8.01		8.01	
0.120	50.00%	12.00	11.99		11.99	
0.018	75.00%	16.00	15.98		15.98	
0.024	100.00%	20.00	19.99		19.99	

Calibration Equipment			
Type:	DMM		
Manufacturer:	Fluke		
2018 Flow Calibrat	Model 87		
Serial No.:	13440128		
Last Cal. Date:	Feb. 16, 2024		

Comments:
2019 Tested pump 2, ran at 0.009 m3/sec
2020 Tested Pump 2, ran at 0.01 m3/sec
2021 Tested Pump 1, ran at 0.010 m3/s
2022 Tested Pump 1, ran at 0.009 m3/s
2023 P1 (new pump), ran at 0.012m3/s
2024 Tested Pump 1, ran at 0.012m3/s
Functional test and mA output check only. This meter was not compared to any reference.

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:



CALIBRATION REPORT

Report No.: LINDSWW 24 232 FIT 101

Date: Dec. 3, 2024

SITE:	Lindsay WWTP	**SERVICE DATE:**	Dec. 3, 2024
PROCESS AREA:	Logie St		
TAG:	232 FIT 101	**TECHNICIAN:**	M Manley
MANUFACTURER:	Krohne		
MODEL:	IFC 300	**JOB REFERENCE:**	LINDSWW 24
SERIAL No.:	S0825543 CG30011100		
INSTR. RANGE:	0000421415		

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**
Type:	GS 8 (X val)		**Type or EGU:**	mA	l/s
Min:	0.00		**Min:**	4.00	0.00
Max:	3.22		**Max:**	20.00	200.00
DN (mm):	250	10 inch			
GK=1 GKL=2	2			coil	
GK:	8.304			open to ground	
Constant:	4177.44				

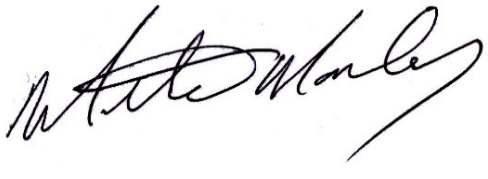
			Before Calibration		**After Calibration**	
Input (Y pos)	**Knob Setting**	**Calc. O/P (l/s)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.00	0	4.00	4.00	0.00%	4.00	0.00%
0.50	A	6.48	6.47	-0.15%	6.47	-0.15%
1.00	B	8.97	8.92	-0.56%	8.92	-0.56%
2.00	C	13.94	13.84	-0.72%	13.84	-0.72%

Calibration Equipment			
Type:	DMM	Simulator	
Manufacturer:	Fluke	Krohne	
2018 Flow Calibrat	Model 87	GS 8B	
Serial No.:	13440128	U1127700020705	
Last Cal. Date:	Feb. 16, 2024	Mar. 26, 2024	

Comments:

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:



CALIBRATION REPORT

Report No.: LINDSWW 24 FIT-Fair

Date: Dec. 5, 2024

SITE:	Lindsay WW Fairgrounds	**SERVICE DATE:**	Dec. 5, 2024
PROCESS AREA:	Fairgrouds SPS		
INSTR. TAG:	FIT-Fair	**TECHNICIAN:**	M Manley
MANUFACTURER:	Greyline Doppler		
MODEL:	DFM-IV	**JOB REFERENCE:**	LINDSWW 24
SERIAL No.:	19456		
Type:	0000421388		

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**	
Type:	Simulation		**Type or EGU:**	mA	m3/s	m3/day
Min:	0.00		**Min:**	4.00	0	0
Max:			**Max:**	20.00	0.056	4838
		programmed				
Pipe ID:	6	5.1				
Material:	plastic					

			Before Calibration		**After Calibration**	
Input	**Input %**	**Calc. m3/s**	**Output**	**%Error**	**Output**	**%Error**
0	0.00%	0	0	0.00%	0	0.00%
22.7	l/s	0.0178	0.018	1.12%	0.018	1.12%
		17.8 l/s				

Calibration Equipment			
Type:	DMM	Clamp-on Transit time Flowmeter	
Manufacturer:	Fluke	Siemens	
2018 Flow Calibrat	Model 87	FUP1010	
Serial No.:	13440128	Service	
Last Cal. Date:	Feb. 16, 2024		

Comments: Verified with clamp on flowmeter, ALC 78, 1486 fps

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:



CALIBRATION REPORT

Report No.: LINDSWW 24 FIT 1

Date: Dec. 5, 2024

SITE:	Mary St SPS	**SERVICE DATE:**	Dec. 5, 2024
PROCESS AREA:	Pump 1	**TECHNICIAN:**	M Manley
INSTR. TAG	FIT 1	**JOB REFERENCE:**	LINDSWW 24
MANUFACTURER:	Krohne		
MODEL:	IFC100		
SERIAL No.:	S17315264		
OCWA Code.	0000423609		

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**
Type:	GS 8 (X val)		**Type or EGU:**	mA	l/s
Min:	0.00		**Min:**	4.00	0.00
Max:	3.69		**Max:**	20.00	25.00
DN (mm):	100	4 inch			
GK=1 GKL=2	2			coil	121.6ohms
GK:	5.657			to ground	36M ohms
Constant:	4177.44				

			Before Calibration		**After Calibration**	
Input (Y pos)	**Knob Setting**	**Calc. O/P (l/s)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.00	0	4.00	3.99	-0.25%	3.99	0.00%
0.50	A	6.17	6.15	-0.32%	6.15	-0.32%
1.00	B	8.33	8.32	-0.12%	8.32	-0.12%
2.00	C	12.67	12.64	-0.24%	12.64	-0.24%
5.00	D	25.67				
10.00	E	47.33				

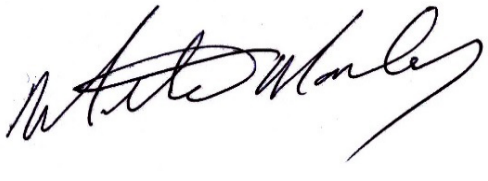
Calibration Equipment			
Type:	DMM	Simulator	
Manufacturer:	Fluke	Krohne	
2018 Flow Calibrat	Model 87	GS 8B	
Serial No.:	13440128	U1127700020705	
Last Cal. Date:	Feb. 16, 2024	Mar. 26, 2024	

Comments: SRB SRWS

34M ohms to ground. These meters have had moisture in the junction boxes. Recommend dry them out in the summer and fill them with potting compound.

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:



CALIBRATION REPORT

Report No.: LINDSWW 24 FIT 2

Date: Dec. 5, 2024

SITE:	Mary St SPS	**SERVICE DATE:**	Dec. 5, 2024
PROCESS AREA:	Pump 2	**TECHNICIAN:**	M Manley
INSTR. TAG	FIT 2	**JOB REFERENCE:**	LINDSWW 24
MANUFACTURER:	Krohne		
MODEL:	IFC100		
SERIAL No.:	S17315262		
OCWA Code.	0000423611		

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**
Type:	GS 8 (X val)		**Type or EGU:**	mA	l/s
Min:	0.00		**Min:**	4.00	0.00
Max:	3.73		**Max:**	20.00	25.00
DN (mm):	100	4 inch			
GK=1 GKL=2	2			coil	102.9 ohms
GK:	5.595			to ground	13M ohms
Constant:	4177.44				

			Before Calibration		**After Calibration**	
Input (Y pos)	**Knob Setting**	**Calc. O/P (l/s)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.00	0	4.00	3.99	-0.25%	3.99	0.00%
0.50	A	6.14	6.13	-0.16%	6.13	-0.16%
1.00	B	8.29	8.27	-0.24%	8.27	-0.24%
2.00	C	12.57	12.55	-0.16%	12.55	-0.16%
5.00	D	25.43				
10.00	E	46.86				

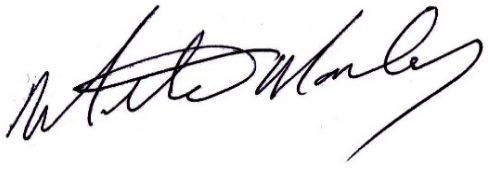
Calibration Equipment			
Type:	DMM	Simulator	
Manufacturer:	Fluke	Krohne	
2018 Flow Calibrat	Model 87	GS 8B	
Serial No.:	13440128	U1127700020705	
Last Cal. Date:	Feb. 16, 2024	Mar. 26, 2024	

Comments: SRB SRWS

2 M ohms to ground. These meters have had moisture in the junction boxes. Recommend dry them out in the summer and fill them with potting compound.

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:



CALIBRATION REPORT

Report No.: LINDSWW 24 FIT 101

Date: Dec. 5, 2024

SITE:	Rivera SPS	**SERVICE DATE:**	Dec. 5, 2024
PROCESS AREA:	FIT 101		
INSTR. TAG	FIT 101	**TECHNICIAN:**	M Manley
MANUFACTURER:	Siemens		
MODEL:	Model 6000 Industry	**JOB REFERENCE:**	LINDSWW 24
SERIAL No.:	333901H188		

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**
Type:	Simulation		**Type or EGU:**	SCADA	l/s
Min:	0%		**Min:**	0.00	0.00
Max:	100%		**Max:**	400.00	400.00
DN (mm):	450	18 inch			
LF Cutoff	1.50%			coil	
Empty Pipe	ON			open to ground	
Cal Factor:	169.7953				

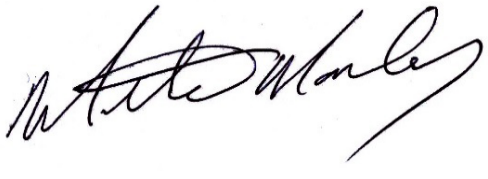
			Before Calibration		**After Calibration**	
Simulation	**mA**	**O/P (l/s)**	**Scada (l/s)**	**%Error**	**Scada (l/s)**	**%Error**
0.00	4.00	0.0	0.0	0.00%	0.0	0.00%
100.00	8.00	100.0				
200.00	12.00	200.0	200.2	0.10%	200.2	0.10%
300.00	16.00	300.0				
400.00	20.00	400.0	399.9	-0.01%	399.9	-0.01%

Calibration Equipment			
Type:	DMM		
Manufacturer:	Fluke		
2018 Flow Calibrat	Model 87		
Serial No.:	13440128		
Last Cal. Date:	Feb. 16, 2024		

Comments: Checked Signal suitability +9

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:



CALIBRATION REPORT

Report No.: LINDSWW 24 FIT 201

Date: Dec. 5, 2024

SITE:	Rivera SPS	**SERVICE DATE:**	Dec. 5, 2024
PROCESS AREA:	FIT 201		
INSTR. TAG	FIT 201	**TECHNICIAN:**	M Manley
MANUFACTURER:	Siemens		
MODEL:	Model 6000 Industry	**JOB REFERENCE:**	LINDSWW 24
SERIAL No.:	333801H188		

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**
Type:	Simulation		**Type or EGU:**	SCADA	l/s
Min:	0%		**Min:**	0.00	0.00
Max:	100%		**Max:**	400.00	400.00
DN (mm):	450	18 inch			
LF Cutoff	1.50%				
Empty Pipe	ON				
Cal Factor:	171.2212				

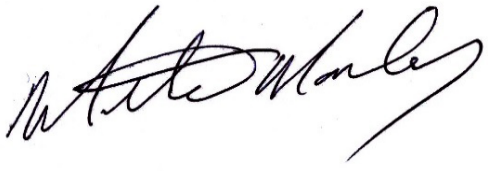
			Before Calibration		**After Calibration**	
Simulation	**mA**	**O/P (l/s)**	**Scada (l/s)**	**%Error**	**Scada (l/s)**	**%Error**
0.00	4.00	0.0	0.0	0.00%	0.0	0.00%
100.00	8.00	100.0				
200.00	12.00	200.0	200.4	0.20%	200.4	0.20%
300.00	16.00	300.0				
400.00	20.00	400.0	400.0	0.00%	400.0	0.00%

Calibration Equipment			
Type:	DMM		
Manufacturer:	Fluke		
2018 Flow Calibrat	Model 87		
Serial No.:	13440128		
Last Cal. Date:	Feb. 16, 2024		

Comments: Checked Signal suitability +9

AS FOUND: PASS **AS LEFT:** PASS

CERTIFIED BY:



Verification report Promag 500

Endress+Hauser
People for Process Automation

Plant operator: OCWA.

Device information

Location	Lindsay WWTP
Device tag	Promag
Module name	C300-01
Nominal diameter	DN750 / 30"
Device name	Promag 500
Order code	5W5B7F-1K11/0
Serial number	T10D6919000
Firmware version	01.01.06

Heartbeat Technology

Calibration

Calibration factor	1.0939
Zero point	-10

Verification information

Operating time (counter)	848d00h22m05s
Date/time (manually recorded)	04.12.24 10:09
Verification ID	5
Verification mode	Internal verification

Overall verification result*

☑ Passed	Details see next page

*Result of the complete device functionality test via Heartbeat Technology

Confirmation

Heartbeat Verification verifies the function of the flowmeter within the specified measuring tolerance, over the useful lifetime of the device, with a total test coverage > 94 %, and complies with the requirements for traceable verification according to DIN EN ISO 9001:2008 – Section 7.6 a. (attested by TÜV-SÜD Industrieservices GmbH)

Notes

Date | Operator's signature | Inspector's signature

Plant operator: OCWA.

Device identification and verification identification	
Serial number	T10D6919000
Device tag	Promag
Verification ID	5

Heartbeat Technology

Sensor		☑ **Passed**
Shot time symmetry		☑ Passed
Hold voltage symmetry		☑ Passed
Coil current loss		☑ Passed
Coil current stability		☑ Passed
Coil resistance		☑ Passed
Electrode circuit 1		☑ Passed
Electrode circuit 2		☑ Passed
Electrode circuit EPD		☑ Passed
Sensor electronic module (ISEM)		☑ **Passed**
Supply voltage		☑ Passed
External reference voltage		☑ Passed
Linearity and reference voltage		☑ Passed
Offset of electrode measuring circuit		☑ Passed
Hold voltage feedback		☑ Passed
Shot voltage feedback		☑ Passed
Electronic current loss		☑ Passed
Coil circuit measurement		☑ Passed
Shot control circuit		☑ Passed
Electrode signal integrity		☑ Passed
System status		☑ **Passed**
I/O module		☑ **Passed**
Input/output 1	26-27 (I/O 1)	☑ Passed
Input/output 2	24-25 (I/O 2)	☑ Passed
Input/output 3	22-23 (I/O 3)	☐ Not plugged
Input/output 4	20-21 (I/O 4)	☐ Not plugged

Plant operator: OCWA.

Device identification and verification identification

Serial number	T10D6919000
Device tag	Promag
Verification ID	5

Heartbeat Technology

Test item with value	Unit	Actual	Min.	Max.	Visualization
Sensor					
Shot time symmetry deviation		0.9975	0.9000	1.1000	
Hold voltage symmetry deviation		1.0000	0.9000	1.1000	
Coil current loss deviation	%	-0.05291	-10.0000	10.0000	
Coil current offset	%	0.00	-0.1	0.1	
Coil current deviation	%	-0.016	-0.1	0.1	
Coil resistance value	Ohm	117.4	50.0	240.0	
Electrode impedance 1	Ohm	417.06			
Electrode impedance 2	Ohm	394.42			
Electrode EPD impedance	Ohm	436.35			
Electrode impedance E1/E2 on E1	Ohm	405.28			
Electrode impedance E1/E2 on E2	Ohm	383.97			
Sensor electronic module (ISEM)					
External reference voltage 1	V	-nan			
Linearity and reference voltage 1		0.9995			
Linearity and reference voltage 2		0.9997			
Measuring point offset		-1.0381	-100.0000	100.0000	
Hold voltage feedback value	%	1.05	-10.0	10.0	
Shot voltage feedback value	%	-0.38	-20.0	20.0	
Electronic current loss deviation	%	0.075	-10.0000	10.0000	
Coil circuit value	%	0.055	-1.0	1.0	
Shot control circuit value	%	-0.0072	-10.0	10.0	
Electrode signal integrity deviation	%	8.15	-40.0	40.0	
System status					

Test item with value		Unit	Actual	Min.	Max.	Visualization
I/O module						
I/O module 1 terminal numbers	26-27 (I/O 1)					
Output 1 value 1		mA	0.01103	-0.1846	0.1846	
Output 1 value 2			0.0000	0.0000	0.0000	
I/O module 2 terminal numbers	24-25 (I/O 2)					
Output 2 value 1			1.0001	0.9995	1.0005	
Output 2 value 2			0.0000	0.0000	0.0000	

Plant operator: OCWA.

Device identification and verification identification	
Serial number	T10D6919000
Device tag	Promag
Verification ID	5

Heartbeat Technology

Test item with value	Unit	Actual
Process conditions		
Volume flow value verification	m^3/d	12417.67
Conductivity value verification	µS/cm	-nan
Electronic temperature	°C	24.0652

Verification report Promag 400

Endress+Hauser
People for Process Automation

Plant operator: OCWA

Device information

Location	Lindsay WW FIT-401
Device tag	FIT401
Module name	K323-00
Nominal diameter	DN450 / 18"
Device name	Promag 400
Order code	5W4C4F-7MD6/0
Serial number	SC22A719000
Firmware version	02.01.01

Heartbeat Technology

Calibration

Calibration factor	1.1386
Zero point	-13.0

Verification information

Operating time (counter)	771d20h42m26s
Date/time (manually recorded)	04.12.24 11:00
Verification ID	27
Verification mode	Standard verification

Overall verification result*

☑ Passed	Details see next page

*Result of the complete device functionality test via Heartbeat Technology

Confirmation

Heartbeat Verification verifies the function of the flowmeter within the specified measuring tolerance, over the useful lifetime of the device, with a total test coverage > 94 %, and complies with the requirements for traceable verification according to DIN EN ISO 9001:2008 – Section 7.6 a. (attested by TÜV-SÜD Industrieservices GmbH)

Notes

Date | Operator's signature | Inspector's signature

Verification report Promag 400

Endress+Hauser
People for Process Automation

Plant operator: OCWA

Device identification and verification identification

Serial number	SC22A719000
Device tag	FIT401
Verification ID	27

Heartbeat Technology

Sensor	✅ **Passed**
Shot time symmetry	✅ Passed
Hold voltage symmetry	✅ Passed
Coil current loss	✅ Passed
Coil current stability	✅ Passed
Coil resistance	✅ Passed
E1 electrode cable	❓ Not done
E2 electrode cable	❓ Not done
EPD electrode cable	❓ Not done
Sensor electronic module (ISEM)	✅ **Passed**
Supply voltage	✅ Passed
Internal voltages	✅ Passed
Linearity and reference voltage	✅ Passed
Offset of electrode measuring circuit	✅ Passed
Hold voltage feedback	✅ Passed
Shot voltage feedback	✅ Passed
Electronic current loss	✅ Passed
Coil circuit measurement	✅ Passed
Shot control circuit	✅ Passed
Electrode signal integrity	✅ Passed
System status	✅ **Passed**
I/O module	✅ **Passed**
Input/output 1	✅ Passed
Input/output 2	❓ Not done
Input/output 3	❓ Not done

Plant operator: OCWA

Device identification and verification identification

Serial number	SC22A719000
Device tag	FIT401
Verification ID	27

Heartbeat Technology

Test item with value	Unit	Actual	Min.	Max.	Visualization
Sensor					
Shot time symmetry deviation		1.0003	0.9000	1.1000	
Hold voltage symmetry deviation		1.0000	0.9000	1.1000	
Coil current loss deviation	%	0.1227	-10.0000	10.0000	
Coil current offset	%	-0.008123	-0.1000	0.1000	
Coil current deviation	%	0.0000	-0.1000	0.1000	
Coil resistance value	Ohm	136.9	50.0	240.0	
E1 electrode impedance	Ohm	993167.2			
E2 electrode impedance	Ohm	1000000			
EPD electrode impedance	Ohm	620238.1			
E1/E2 electrode impedance on E1	Ohm	1000000			
E1/E2 electrode impedance on E2	Ohm	1000000			
Sensor electronic module (ISEM)					
Supply voltage 30.0V	V	31.15	27.000	35.000	
Linearity and reference voltage 1		0.9994	0.9900	1.0100	
Linearity and reference voltage 2		0.9995	0.9900	1.0100	
Measuring point offset		7.0784	-100.0000	100.0000	
Hold voltage feedback value	%	0.73	-10.0	10.0	
Shot voltage feedback value	%	-0.70	-20.0	20.0	
Electronic current loss deviation	%	0.13	-10.0000	10.0000	
Coil circuit value	%	0.00	-1.0	1.0	
Shot control circuit value	%	-0.090	-10.0	10.0	
Electrode signal integrity deviation	%	0.28	-40.0	40.0	

Test item with value	Unit	Actual	Min.	Max.	Visualization
I/O module					
Output 1 value 1	mA	3.9873	3.8600	4.1400	
Output 1 value 2		0.0000	0.0000	0.0000	
Output 2 value 1		0.0000	0.0000	0.0000	
Output 3 value 1		0.0000	0.0000	0.0000	

Plant operator: OCWA

Device identification and verification identification

Serial number	SC22A719000
Device tag	FIT401
Verification ID	27

Heartbeat Technology

Test item with value	Unit	Actual
Process conditions		
Volume flow value verification	m^3/d	0.0000
Conductivity value verification	µS/cm	-nan
Electronic temperature	°C	32.0
Current difference potential	V	-0.02381
Current potential electrode 1	V	-0.08525
Current potential electrode 2	V	-0.06257
Current potential electrode Pipe GND	V	0.002075

Verification report Promag 400

Endress+Hauser
People for Process Automation

Plant operator: OCWA

Device information

Location	LINDSAY WWTP FIT-411
Device tag	Promag
Module name	K323-00
Nominal diameter	DN450 / 18"
Device name	Promag 400
Order code	5W4C4F-7MD6/0
Serial number	SC22A819000
Firmware version	02.01.01

Heartbeat Technology

Calibration

Calibration factor	1.1444
Zero point	3.0

Verification information

Operating time (counter)	771d16h35m30s
Date/time (manually recorded)	04.12.24 11:33
Verification ID	4
Verification mode	Standard verification

Overall verification result*

☑ Passed	Details see next page

*Result of the complete device functionality test via Heartbeat Technology

Confirmation

Heartbeat Verification verifies the function of the flowmeter within the specified measuring tolerance, over the useful lifetime of the device, with a total test coverage > 94 %, and complies with the requirements for traceable verification according to DIN EN ISO 9001:2008 – Section 7.6 a. (attested by TÜV-SÜD Industrieservices GmbH)

Notes

Date | Operator's signature | Inspector's signature

Verification report Promag 400

Endress+Hauser
People for Process Automation

Plant operator: OCWA

Device identification and verification identification

Serial number	SC22A819000
Device tag	Promag
Verification ID	4

Heartbeat Technology

Sensor	✅ **Passed**
Shot time symmetry	✅ Passed
Hold voltage symmetry	✅ Passed
Coil current loss	✅ Passed
Coil current stability	✅ Passed
Coil resistance	✅ Passed
E1 electrode cable	✅ Passed
E2 electrode cable	✅ Passed
EPD electrode cable	✅ Passed
Sensor electronic module (ISEM)	✅ **Passed**
Supply voltage	✅ Passed
Internal voltages	✅ Passed
Linearity and reference voltage	✅ Passed
Offset of electrode measuring circuit	✅ Passed
Hold voltage feedback	✅ Passed
Shot voltage feedback	✅ Passed
Electronic current loss	✅ Passed
Coil circuit measurement	✅ Passed
Shot control circuit	✅ Passed
Electrode signal integrity	✅ Passed
System status	✅ **Passed**
I/O module	✅ **Passed**
Input/output 1	✅ Passed
Input/output 2	❓ Not done
Input/output 3	❓ Not done

Plant operator: OCWA

Device identification and verification identification

Serial number	SC22A819000
Device tag	Promag
Verification ID	4

Heartbeat Technology

Test item with value	Unit	Actual	Min.	Max.	Visualization
Sensor					
Shot time symmetry deviation		0.9995	0.9000	1.1000	
Hold voltage symmetry deviation		0.9984	0.9000	1.1000	
Coil current loss deviation	%	0.1586	-10.0000	10.0000	
Coil current offset	%	0.0000	-0.1000	0.1000	
Coil current deviation	%	0.008123	-0.1000	0.1000	
Coil resistance value	Ohm	135.5	50.0	240.0	
E1 electrode impedance	Ohm	487.06			
E2 electrode impedance	Ohm	468.79			
EPD electrode impedance	Ohm	512.34			
E1/E2 electrode impedance on E1	Ohm	475.54			
E1/E2 electrode impedance on E2	Ohm	458.13			
Sensor electronic module (ISEM)					
Supply voltage 30.0V	V	31.17	27.000	35.000	
Linearity and reference voltage 1		0.9997	0.9900	1.0100	
Linearity and reference voltage 2		0.9997	0.9900	1.0100	
Measuring point offset		5.1972	-100.0000	100.0000	
Hold voltage feedback value	%	0.66	-10.0	10.0	
Shot voltage feedback value	%	-0.78	-20.0	20.0	
Electronic current loss deviation	%	0.72	-10.0000	10.0000	
Coil circuit value	%	0.055	-1.0	1.0	
Shot control circuit value	%	-0.084	-10.0	10.0	
Electrode signal integrity deviation	%	-1.93	-40.0	40.0	

Test item with value	Unit	Actual	Min.	Max.	Visualization
I/O module					
Output 1 value 1	mA	8.6923	8.5034	8.8772	
Output 1 value 2		0.0000	0.0000	0.0000	
Output 2 value 1		0.0000	0.0000	0.0000	
Output 3 value 1		0.0000	0.0000	0.0000	

Plant operator: OCWA

Device identification and verification identification

Serial number	SC22A819000
Device tag	Promag
Verification ID	4

Heartbeat Technology

Test item with value	Unit	Actual
Process conditions		
Volume flow value verification	m^3/d	4687.971
Conductivity value verification	µS/cm	-nan
Electronic temperature	°F	88.1
Current difference potential	V	-0.01008
Current potential electrode 1	V	0.2720
Current potential electrode 2	V	0.2849
Current potential electrode Pipe GND	V	-0.00004355

Verification report Promag 400

Endress+Hauser
People for Process Automation

Plant operator: OCWA

Device information

Location	Lindsay WWTP FIT-421
Device tag	FIT421
Module name	K323-00
Nominal diameter	DN150 / 6"
Device name	Promag 400
Order code	5W4C1F-1H9E4/0
Serial number	SA25B919000
Firmware version	02.01.01

Calibration

Calibration factor	1.1313
Zero point	1.0

Verification information

Operating time (counter)	771d20h44m52s
Date/time (manually recorded)	12.12.24 11:21
Verification ID	10
Verification mode	Standard verification

Overall verification result*

☑ Passed	Details see next page

*Result of the complete device functionality test via Heartbeat Technology

Confirmation

Heartbeat Verification verifies the function of the flowmeter within the specified measuring tolerance, over the useful lifetime of the device, with a total test coverage > 94 %, and complies with the requirements for traceable verification according to DIN EN ISO 9001:2008 – Section 7.6 a. (attested by TÜV-SÜD Industrieservices GmbH)

Notes

Date | Operator's signature | Inspector's signature

Verification report Promag 400

Endress+Hauser
People for Process Automation

Plant operator: OCWA

Device identification and verification identification

Serial number	SA25B919000
Device tag	FIT421
Verification ID	10

Heartbeat Technology

Sensor	☑ **Passed**
Shot time symmetry	☑ Passed
Hold voltage symmetry	☑ Passed
Coil current loss	☑ Passed
Coil current stability	☑ Passed
Coil resistance	☑ Passed
E1 electrode cable	☑ Passed
E2 electrode cable	☑ Passed
EPD electrode cable	☑ Passed
Sensor electronic module (ISEM)	☑ **Passed**
Supply voltage	☑ Passed
Internal voltages	☑ Passed
Linearity and reference voltage	☑ Passed
Offset of electrode measuring circuit	☑ Passed
Hold voltage feedback	☑ Passed
Shot voltage feedback	☑ Passed
Electronic current loss	☑ Passed
Coil circuit measurement	☑ Passed
Shot control circuit	☑ Passed
Electrode signal integrity	☑ Passed
System status	☑ **Passed**
I/O module	☑ **Passed**
Input/output 1	☑ Passed
Input/output 2	? Not done
Input/output 3	? Not done

Plant operator: OCWA

Device identification and verification identification

Serial number	SA25B919000
Device tag	FIT421
Verification ID	10

Heartbeat Technology

Test item with value	Unit	Actual	Min.	Max.	Visualization
Sensor					
Shot time symmetry deviation		1.0007	0.9000	1.1000	
Hold voltage symmetry deviation		1.0000	0.9000	1.1000	
Coil current loss deviation	%	0.05291	-10.0000	10.0000	
Coil current offset	%	0.008123	-0.1000	0.1000	
Coil current deviation	%	0.008123	-0.1000	0.1000	
Coil resistance value	Ohm	68.2	50.0	240.0	
E1 electrode impedance	Ohm	513.90			
E2 electrode impedance	Ohm	510.62			
EPD electrode impedance	Ohm	513.67			
E1/E2 electrode impedance on E1	Ohm	519.55			
E1/E2 electrode impedance on E2	Ohm	516.50			
Sensor electronic module (ISEM)					
Supply voltage 30.0V	V	31.18	27.000	35.000	
Linearity and reference voltage 1		0.9994	0.9900	1.0100	
Linearity and reference voltage 2		0.9995	0.9900	1.0100	
Measuring point offset		2.1759	-100.0000	100.0000	
Hold voltage feedback value	%	2.02	-10.0	10.0	
Shot voltage feedback value	%	-0.45	-20.0	20.0	
Electronic current loss deviation	%	-0.090	-10.0000	10.0000	
Coil circuit value	%	-0.055	-1.0	1.0	
Shot control circuit value	%	-0.19	-10.0	10.0	
Electrode signal integrity deviation	%	0.51	-40.0	40.0	

Test item with value	Unit	Actual	Min.	Max.	Visualization
I/O module					
Output 1 value 1	mA	4.0063	3.8600	4.1400	
Output 1 value 2		0.0000	0.0000	0.0000	
Output 2 value 1		0.0000	0.0000	0.0000	
Output 3 value 1		0.0000	0.0000	0.0000	

Plant operator: OCWA

Device identification and verification identification

Serial number	SA25B919000
Device tag	FIT421
Verification ID	10

Heartbeat Technology

Test item with value	Unit	Actual
Process conditions		
Volume flow value verification	m^3/d	0.0000
Conductivity value verification	µS/cm	-nan
Electronic temperature	°C	31.5
Current difference potential	V	0.008133
Current potential electrode 1	V	0.01165
Current potential electrode 2	V	0.005730
Current potential electrode Pipe GND	V	0.001018

Flowmeter Verification Certificate Transmitter

OCWA K	Lindsay WW
Customer	Plant
Jennings	--------
Order code	Tag Name
PROMAG 10 W DN350	1.0729 - 1.0729
Device type	K-Factor
F809B216000	0
Serial number	Zero point
V1.03.00	
Software Version Transmitter	Software Version I/O-Module
12/03/2024	13:10
Verification date	Verification time

Verification result Transmitter: Failed

Test item	Result	Applied Limits
Amplifier	Passed	Basis: 0.65 %
Current Output 1	Failed	0.05 mA
Pulse Output 1	Not tested	0 P
Test Sensor	Failed	

FieldCheck Details	**Simubox Details**
550149	
Production number	Production number
1.07.10	1.00.01
Software Version	Software Version
03/2024	03/2024
Last Calibration Date	Last Calibration Date

Date Operator's Sign Inspector's Sign

Endress+Hauser
People for Process Automation

FieldCheck - Result Tab Transmitter

Customer	**OCWA K**	Plant	**Lindsay WW**
Order code	**Jennings**	Tag Name	**--------**
Device type	**PROMAG 10 W DN350**	K-Factor	**1.0729 - 1.0729**
Serial number	**F809B216000**	Zero point	**0**
Software Version Transmitter	**V1.03.00**	Software Version I/O-Module	
Verification date	**12/03/2024**	Verification time	**13:10**

Verification Flow end value (100 %): 384.845 l/s
Flow speed 4.00 m/s

Passed / Failed	Test item	Simul. Signal	Limit Value	Deviation
	Test Transmitter			
✓	Amplifier	19.242 l/s (5%)	1.60 %	-0.53 %
✓		38.485 l/s (10.0%)	1.10 %	-0.92 %
✓		192.424 l/s (50.0%)	0.70 %	-0.03 %
✓		384.846 l/s (100%)	0.65 %	-0.01 %
✓	Current Output 1	4.000 mA (0%)	0.05 mA	0.014 mA
✓		4.800 mA (5%)	0.05 mA	0.007 mA
✓		5.600 mA (10.0%)	0.05 mA	0.009 mA
✓		12.000 mA (50.0%)	0.05 mA	0.018 mA
✗		20.000 mA (100%)	0.05 mA	***0.051 mA***
–	Pulse Output 1	---	---	---
		Start value	**Limits range**	**Measured value**
	Test Sensor			
✓	Coil Curr. Rise	100.001 ms	23.340..100.001 ms	59.505 ms
✗	Coil Curr. Stability		---	**---**

Legend of symbols

✓	✗	–	?	!
Passed	Failed	not tested	not testable	Attention

FieldCheck: Parameters Transmitter

Customer	**OCWA K**	Plant	**Lindsay WW**
Order code	**Jennings**	Tag Name	**--------**
Device type	**PROMAG 10 W DN350**	K-Factor	**1.0729 - 1.0729**
Serial number	**F809B216000**	Zero point	**0**
Software Version Transmitter	**V1.03.00**	Software Version I/O-Module	
Verification date	**12/03/2024**	Verification time	**13:10**

Curent Output	**Assign**	**Current Range**	**Value 0_4mA**	**Value 20 mA**		
Terminal 26/27	VOLUME FLOW	4-20 mA active	0.0 l/s	300.01 l/s		
Pulse Output	**Assign**	**Pulse Value**	**Output signal**	**Pulse width**		
Terminal 24/25	VOLUME FLOW	0.114 m3/P	Passive/Positive	100.01 ms		

Actual System Ident. 115.0

SIEMENS MAGFLO® Verification Certificate

Customer:

Name	OCWA Kawartha
Address	
Phone	
Email	

MAGFLO® Identification:

TAG No./Name	0
Sensor Code No.	7ME631
Sensor Serial No.	671540H193
Transmitter Code No.	7ME691
Transmitter Serial No.	N1E2208822
Location	Lindsay ST N Leachate

Results:

Verification file name or No.		Leachate
Transmitter		Passed
Sensor	Insulation	Passed
	Magnetic Circuit	Passed

Velocity	Current Output			Frequency Output		
Theoretical	Theoretical	Actual	Deviation	Theoretical	Actual	Deviation
0.5m/s	4.800mA	4.801mA	0.14%	0.500kHz	0.498kHz	-0.37%
1.0m/s	5.600mA	5.605mA	0.29%	1.000kHz	1.001kHz	0.07%
3.0m/s	8.800mA	8.804mA	0.08%	3.000kHz	3.001kHz	0.05%

Current Output 4-20mA Frequency Output 0-10kHz

Transmitter Settings:

Basic	Qmax.	6.20000 l/s
	Flow Direction	Positive
	Low flow Cut-off	1.50%
	Empty Pipe	OFF
Output	Current Output	ON (4-20mA)
	Time Constant	5.0 Sec.
	Relay Output	Error Level
	Digital Output	Pulse
	Frequency Range	N/A
	Time Constant	N/A
	Volume/pulse	0.99999953 US G/p
	Pulse width	0.066 sec.
	Pulse polarity	Positiv
Totalizer 1 value before test		98189.9140625 m³
Totalizer 1 value after test		98189.9375 m³
Totalizer 2 value before test		8334.03613281 m³
Totalizer 2 value after test		8334.0390625 m³
Operating time in days		2947

Sensor Details:

Size	DN 100 4 IN
Cal. Factor	7.6739769
Correction Factor	1.0
Excitation Freq.	7.5Hz

Verificator Details (083F5061)

Serial No.	001113N039
Device No.	91738
Software Version	1.40
PC-Software Version	5.01
Cal. date	2024.10.24
ReCal. date	2025.10.24

Comments

These tests verify that the flowmeter is functioning within 2% deviation of the original test parameters.

Verification is traceable to National and International Standards.

Date and signature

2024.12.03 M Manley

VeriMaster - Flow Meter Verification Report

Customer Information	
Customer	OCWA K
Verification Download	Tue, Dec 03, 2024

Meter Information	
Meter Owner	LindsaySt N
Meter Type	WaterMaster
Sensor Size	DN300
Pipe Status	Fluid Present
Sensor Type	Fullbore
Sensor Serial No	3K620000175045
Transmitter Serial No	3K620000175045
Tag	ABB Warminster
Location	?

Overall Status: Pass

The flowmeter has passed its internal continuous verification and automatic self calibration. It is working within +/ -1% of its original factory calibration

Summary of Results	
Coil Group	Passed
Electrode Group	Passed
Sensor Group	Passed
Transmitter Signal	Passed
Transmitter Driver	Passed
Output Group	Passed
Configuration	Passed

Verification History	
OIML Accuracy Alarms	0

Totaliser Information	
Forward	9834425.78 m3
Reverse	248436.73 m3
Net	9585989.05 m3

Sensor Information	
Q3	694.44 l/s
Calibration Accuracy	OIML Class 2
Sensor Calibration Factors	150.5%; 0.00 mm/s; 11
Date of Manufacture	2014 Sept 17
Run Hours	3540days 14hrs 15mins

Sensor Data	
Coil Current	179.9 mA
Coil Inductance	279.6 mH
Coil Inductance Shift	-0.0%
Coil / Loop Resistance	36.4 ohm

Transmitter Information	
Application Version	V01.05.00 12/07/12
MSP Version	00.00.04
Date of Manufacture	2014 Sept 17
Run Hours	4679days 2hrs 54mins

Transmitter Data	
Tx Gain - Adjustment	0.1%

VeriMaster Information	
Version	01.00.03
Limit Version	01.00.01

Current Output	
4mA Value	Pass : 4.000 mA ; 0.00%
12mA Value	Pass : 11.992 mA ; 0.07%
20mA Value	Pass : 20.000 mA ; 0.00%

Pulse Output	
Output 1: 1200.0Hz	Not tested
Output 1: 600.0Hz	Not tested
Output 2: 1200.0Hz	Not tested
Output 2: 600.0Hz	Not tested

Installation Comments / Equipment used:

FIT-102

Configuration Settings	
Mains Frequency	60 Hz
Qmax	400.00 l/s
Pulses/Unit	10.000000
Pulses Limit Frequency	1200.0 Hz
Sensor User Span/Zero	100.0%; 0.00 mm/s
User Flow Cutoff/Hysterisis	1.00%; 20%
Meter Mode	Normal operation

Date Tue, Dec 03, 2024 Operator Signature Print

ABB Instrumentation World Flow Technology

ABB Limited
Oldends Lane, Stonehouse
Gloucestershire, GL10 3TA UK
Tel: +44(0) 1453 826661
Fax: +44(0) 1453 821121
instrumentation@gb.abb.com

ABB Automation Inc.
125 East County Line Road
Warminster, PA 18974 USA
Tel: +1 215 674 6000
Fax: +1 215 674 6394
instrumentation@gb.abb.com

ABB Australia Pty Ltd.
Bapaune Rd
Moorebank, NSW 2170
Tel: +61-2-982 1-0111
Fax: +61-2-9821-0950

ABB Automation GmbH
Dransfelder Str.2
37079 Gottingen, GERMANY
Tel: +49 (0) 551 905212
Fax: +1 (215) 674 6394

MASSTEC WEIGHING SYSTEMS

887 Highway #7 Peterborough, ON K9J 6X7 | phone: (705) 745-2488 | toll-free: 1-800-363-9007
www.masstec.ca

Wednesday, March 6, 2024

VEHICLE SCALE TEST REPORT (QF-11.3)

Customer:
18- City of Kawartha Lakes
Lindsay Inbound Site

Address: **51 Wilson Road**
City: **Lindsay**
Postal Code: **K9V 4R3**

Province: **Ontario**
Phone: **705-324-9411**

Make of Scale:	Model No:	Serial No:	Scale Capacity:	Graduation Size:
Active	**CMD-1080-1-100-FD2**	**033024**	**70,000kg**	**10 kg**

Make of Indicator:	Model No:	Serial No:	Pounds	Kilograms
Rice Lake Weighing Systems Inc.	**820**	**006095**		**X**

SECTION TESTING (Test 1)

A shift test in which the test load is applied over individual sections of the scale.

1st LOAD	**SECTION 1**	**SECTION 2**	**SECTION 3**	**SECTION 4**	**SECTION 5**
AS FOUND	20070	20060	20070	20070	20060
2ND LOAD	**SECTION 1**	**SECTION 2**	**SECTION 3**	**SECTION 4**	**SECTION 5**
AS LEFT	20070	20060	20070	20070	20060

Scale house/Indicator (Reference to Platform)

LOAD TESTING (Test 2)

Normal basic performances in which observations are made as increments of test load are successively added to the load receiving elements of the scale.

TEST LOAD (KG)		AS FOUND SCALE INDICATION	AS LEFT SCALE INDICATION
0 Load	0	0	0
	2000	1990	2000
	4000	3990	4000
	6000	5990	6000
	8000	7980	8000
MAX	10000	9980	10000
	8000	7980	8000
	6000	5990	6000
	4000	3990	4000
	2000	1990	2000
0 Load	0	0	0

MASSTEC WEIGHING SYSTEMS

887 Highway #7 Peterborough, ON K9J 6X7 | phone: (705) 745-2488 | toll-free: 1-800-363-9007

www.masstec.ca

STRAIN-LOAD (Test 3)

Indicated weight of empty vehicle	Known standards	Total weight indicated
10,070 kg	Plus 10,000 kg	20,070 kg

DESCRIPTION OF REPAIR AND ADJUSTMENTS

Calibrated zero and span at 10,000 kg known standards

WEIGHT IDENTIFICATION NUMBERS:	M1-20
Measurement Canada Certificate #:	1418981

Calibration Date:	December 6, 2023
Next Calibration Date:	**June 6, 2024**

INSPECTION AND TESTS PERFORMED BY: Brent Cole & Dana Smith

MASSTEC
WEIGHING SYSTEMS

Scale is accurate and approved for use by:

MASSTEC
WEIGHING SYSTEMS

MASSTEC WEIGHING SYSTEMS

887 Highway #7 Peterborough, ON K9J 6X7 | phone: (705) 745-2488 | toll-free: 1-800-363-9007
www.masstec.ca

Wednesday, March 6, 2024

VEHICLE SCALE TEST REPORT (QF-11.3)

Customer:
18- City of Kawartha Lakes
Lindsay Outbound Site

Address: **51 Wilson Road**
City: **Lindsay**
Postal Code: **K9V 4R3**

Province: **Ontario**
Phone: **705-324-9411**

Make of Scale:	Model No:	Serial No:	Scale Capacity:	Graduation Size:
Active	**CMD-1080-1-100-FD2**	**033025**	**70,000kg**	**10 kg**

Make of Indicator:	Model No:	Serial No:	Pounds	Kilograms
Rice Lake Weighing Systems Inc.	**680 Synergy Plus**	**1963200145**		**X**

SECTION TESTING (Test 1)

A shift test in which the test load is applied over individual sections of the scale.

1st LOAD	**SECTION 1**	**SECTION 2**	**SECTION 3**	**SECTION 4**	**SECTION 5**
AS FOUND	20070	20070	20060	20060	20050
2ND LOAD	**SECTION 1**	**SECTION 2**	**SECTION 3**	**SECTION 4**	**SECTION 5**
AS LEFT	20070	20070	20060	20060	20050

Scale house/Indicator (Reference to Platform)

LOAD TESTING (Test 2)

Normal basic performances in which observations are made as increments of test load are successively added to the load receiving elements of the scale.

TEST LOAD (KG)		AS FOUND SCALE INDICATION	AS LEFT SCALE INDICATION
0 Load	0	0	0
	2000	1990	2000
	4000	3990	4000
	6000	5980	6000
	8000	7980	8000
MAX	10000	9970	10000
	8000	7980	8000
	6000	5980	6000
	4000	3990	4000
	2000	1990	2000
0 Load	0	0	0

MASSTEC WEIGHING SYSTEMS

887 Highway #7 Peterborough, ON K9J 6X7 | phone: (705) 745-2488 | toll-free: 1-800-363-9007

www.masstec.ca

STRAIN-LOAD (Test 3)

Indicated weight of empty vehicle	Known standards	Total weight indicated
10,070 kg	Plus 10,000 kg	20,070 kg

DESCRIPTION OF REPAIR AND ADJUSTMENTS

Calibrated zero and span at 10,000 kg known standards

WEIGHT IDENTIFICATION NUMBERS:	M1-20 [500kg]
Measurement Canada Certificate #:	1418981

Calibration Date:	December 6, 2023
Next Calibration Date:	**June 6, 2024**

INSPECTION AND TESTS PERFORMED BY: Brent Cole & Dana Smith

MASSTEC
WEIGHING SYSTEMS



Scale is accurate and approved for use by:

MASSTEC
WEIGHING SYSTEMS

MASSTEC WEIGHING SYSTEMS

887 Highway #7 Peterborough, ON K9J 6X7 | phone: (705) 745-2488 | toll-free: 1-800-363-9007
www.masstec.ca

VEHICLE SCALE TEST REPORT (QF-11.3)

Wednesday, December 4, 2024

Customer:
City of Kawartha Lakes
Inbound scale

Address: 51 Wilson rd.
City: Lindsay
Postal Code: K9V 4R3

Province: Ontario
Phone: 705-324-9411

Make of Scale: Active	Model No: CMD-1080-1-100-FD2	Serial No: 033024	Scale Capacity: 70,000kg	Graduation Size: 10kg
Make of Indicator: Rice Lake	Model No: 820	Serial No: 006095	Pounds	Kilograms x

SECTION TESTING (Test 1)

A shift test in which the test load is applied over individual sections of the scale.

1st LOAD	SECTION 1	SECTION 2	SECTION 3	SECTION 4	SECTION 5
AS FOUND	19970	19990	19070	19970	19970
2ND LOAD	SECTION 1	SECTION 2	SECTION 3	SECTION 4	SECTION 5
AS LEFT	19990	19990	19990	19990	19990

Scale house/Indicator (Reference to Platform)

LOAD TESTING (Test 2)

Normal basic performances in which observations are made as increments of test load are successively added to the load receiving elements of the scale.

	TEST LOAD (KG)	AS FOUND SCALE INDICATION	AS LEFT SCALE INDICATION
0 Load	0	0	0
	2000	2010	2000
	4000	4010	4000
	6000	6020	6000
	8000	8020	8000
MAX	10000	10020	10000
	8000	8020	8000
	6000	6020	6000
	4000	4010	4000
	2000	2010	2000
0 Load	0	0	0

MASSTEC WEIGHING SYSTEMS

887 Highway #7 Peterborough, ON K9J 6X7 | phone: (705) 745-2488 | toll-free: 1-800-363-9007
www.masstec.ca

STRAIN-LOAD (Test 3)

Indicated weight of empty vehicle	Known standards	Total weight indicated
9900 kg	Plus 10,000 kg	19900 kg

DESCRIPTION OF REPAIR AND ADJUSTMENTS

Adjust sections at 19,990 kg. Calibrated Zero and Span at 10,000kg

WEIGHT IDENTIFICATION NUMBERS:	**M1-20**
Measurement Canada Certificate #:	**1423482**

Calibration Date: December 4, 2024.

Next Calibration Date: June 4, 2025

INSPECTION AND TESTS PERFORMED BY: Brent Cole/Dana Smith

MASSTEC WEIGHING SYSTEMS

Scale is accurate and approved for use by:

MASSTEC
WEIGHING SYSTEMS

MASSTEC WEIGHING SYSTEMS

887 Highway #7 Peterborough, ON K9J 6X7 | phone: (705) 745-2488 | toll-free: 1-800-363-9007
www.masstec.ca

VEHICLE SCALE TEST REPORT (QF-11.3)

Wednesday, December 4, 2024

Customer:
City of Kawartha Lakes
Outbound Scale

Address: 51 Wilson Rd
City: Lindsay
Postal Code: K9V 4R3

Province: Ontario
Phone: 705-324-9411

Make of Scale:	**Model No:**	**Serial No:**	**Scale Capacity:**	**Graduation Size:**
Active	CMD-1080-1-100-FD2	033025	70,000 kg	10 kg
Make of Indicator:	**Model No:**	**Serial No:**	**Pounds**	**Kilograms**
Rice Lake	680 Synergy Plus	1963200145		x

SECTION TESTING (Test 1)

A shift test in which the test load is applied over individual sections of the scale.

1st LOAD	**SECTION 1**	**SECTION 2**	**SECTION 3**	**SECTION 4**	**SECTION 5**
AS FOUND	**19990**	**19990**	**19990**	**19990**	**19990**
2ND LOAD	**SECTION 1**	**SECTION 2**	**SECTION 3**	**SECTION 4**	**SECTION 5**
AS LEFT	**19990**	**19990**	**19990**	**19990**	**19990**

Scale house/Indicator (Reference to Platform)

MASSTEC WEIGHING SYSTEMS

LOAD TESTING (Test 2)

Normal basic performances in which observations are made as increments of test load are successively added to the load receiving elements of the scale.

	TEST LOAD (KG)	**AS FOUND SCALE INDICATION**	**AS LEFT SCALE INDICATION**
0 Load	**0**	**0**	**0**
	2000	**2000**	**2000**
	4000	**4000**	**4000**
	6000	**6000**	**6000**
	8000	**8000**	**8000**
MAX	**10000**	**10000**	**10000**
	8000	**8000**	**8000**
	6000	**6000**	**6000**
	4000	**4000**	**4000**
	2000	**2000**	**2000**
0 Load	**0**	**0**	**0**

MASSTEC WEIGHING SYSTEMS

887 Highway #7 Peterborough, ON K9J 6X7 | phone: (705) 745-2488 | toll-free: 1-800-363-9007
www.masstec.ca

STRAIN-LOAD (Test 3)

Indicated weight of empty vehicle	Known standards	Total weight indicated.
9,990 kg	Plus 10,000 kg	19,990 kg

DESCRIPTION OF REPAIR AND ADJUSTMENTS

No adjustments required.

WEIGHT IDENTIFICATION NUMBERS: **M1-20**
Measurement Canada Certificate #: **1423482**

Calibration Date: December 4, 2024

Next Calibration Date: June 4, 2025

INSPECTION AND TESTS PERFORMED BY: Brent Cole/Dana Smith

MASSTEC WEIGHING SYSTEMS



Scale is accurate and approved for use by:

MASSTEC
WEIGHING SYSTEMS

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Appendix V:
Community Complaints

There were no formal documented complaints for the Lindsay WWTP in 2024.

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Appendix VI:
Bypass, Overflows, Spill, Abnormal Events

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

48 Lagoon Rd
Lindsay, ON K9V 4R3

Tel: 705-738-9734
www.ocwa.com

David Bradley
District Manager
Peterborough District Office
Ministry of the Environment, Conservation and Parks
300 Water Street, 2nd Floor, South Tower
Peterborough, ON
K9J 3C7

May 8, 2024

Dear Mr. Bradley:

Re: Lindsay WWTP 2024 Q1 Bypass Event and Overflow Event Summary Report

Amended Environmental Compliance Approval #1696-BPLL4R sections 4(6) and 5(6) issued June 29, 2020 for the Lindsay WWTP requires a Bypass Event and Overflow Event summary report be submitted to the District Manager on a quarterly basis, no later than February 15, May 15, August 15, and November 15 each calendar year.

Amended Environmental Compliance Approval #1328-AN5PBL section 5(3) issued July 4, 2017 for the Rivera PS requires an Overflow Event summary report be submitted to the Water Supervisor on a quarterly basis, no later than February 14, May 15, August 14, and November 15 each calendar year.

There were no incidents of Bypass or Overflow Events at the Lindsay WWTP or Pumping Station during the first quarter of 2024 (January, February and March).

Please contact me if you have any questions or comments.

Best regards,

Julie Mather
Process & Compliance Technician
Ontario Clean Water Agency
Kawartha Hub
(705) 731-9125

CC: Brent Martin, OCWA - Operations Manager
Julie Mulligan, OCWA - SPC Manager (A)
Lynette Nicholson, OCWA – General Manager
Amber Hayter, Kawartha Lakes – Manager, Water & Wastewater
Michelle Flaherty, Kawartha Lakes – Contract Coordinator
Brittney Wielgos, MECP – Water Supervisor
Brad Jackson, MECP – Water Compliance Officer

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

48 Lagoon Rd
Lindsay, ON K9V 4R3

Tel: 705-738-9734
www.ocwa.com

David Bradley
District Manager
Peterborough District Office
Ministry of the Environment, Conservation and Parks
300 Water Street, 2nd Floor, South Tower
Peterborough, ON
K9J 3C7

August 7, 2024

Dear Mr. Bradley:

Re: Lindsay WWTP 2024 Q2 Bypass Event and Overflow Event Summary Report

Amended Environmental Compliance Approval #1696-BPLL4R sections 4(6) and 5(6) issued June 29, 2020 for the Lindsay WWTP requires a Bypass Event and Overflow Event summary report be submitted to the District Manager on a quarterly basis, no later than February 15, May 15, August 15, and November 15 each calendar year.

Amended Environmental Compliance Approval #1328-AN5PBL section 5(3) issued July 4, 2017 for the Rivera PS requires an Overflow Event summary report be submitted to the Water Supervisor on a quarterly basis, no later than February 14, May 15, August 14, and November 15 each calendar year.

There were no incidents of Bypass or Overflow Events at the Lindsay WWTP or Pumping Station during the second quarter of 2024 (April, May, and June).

Please contact me if you have any questions or comments.

Best regards,

Julie Mather
Process & Compliance Technician
Ontario Clean Water Agency
Kawartha Hub
(705) 731-9125

CC: Brent Martin, OCWA - Operations Manager
Julie Mulligan, OCWA - SPC Manager (A)
Lynette Nicholson, OCWA – General Manager
Amber Hayter, Kawartha Lakes – Manager, Water & Wastewater
Michelle Flaherty, Kawartha Lakes – Contract Coordinator
Brittney Wielgos, MECP – Water Supervisor
Brad Jackson, MECP – Water Compliance Officer

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

48 Lagoon Rd
Lindsay, ON K9V 4R3

Tel: 705-738-9734
www.ocwa.com

David Bradley
District Manager
Peterborough District Office
Ministry of the Environment, Conservation and Parks
300 Water Street, 2nd Floor, South Tower
Peterborough, ON
K9J 3C7

October 25, 2024

Dear Mr. Bradley:

Re: Lindsay WWTP 2024 Q3 Bypass Event and Overflow Event Summary Report

Amended Environmental Compliance Approval #1696-BPLL4R sections 4(6) and 5(6) issued June 29, 2020 for the Lindsay WWTP requires a Bypass Event and Overflow Event summary report be submitted to the District Manager on a quarterly basis, no later than February 15, May 15, August 15, and November 15 each calendar year.

Amended Environmental Compliance Approval #1328-AN5PBL section 5(3) issued July 4, 2017 for the Rivera PS requires an Overflow Event summary report be submitted to the Water Supervisor on a quarterly basis, no later than February 14, May 15, August 14, and November 15 each calendar year.

There were no incidents of Bypass or Overflow Events at the Lindsay WWTP or Pumping Station during the third quarter of 2024 (July, August, and September).

Please contact me if you have any questions or comments.

Best regards,

Katie Campbell
Process & Compliance Technician
Ontario Clean Water Agency
Kawartha Hub
(705) 934-0026

CC: Brent Martin, OCWA - Operations Manager
Allison McCann, OCWA - SPC Manager
Lynette Nicholson, OCWA – General Manager
Karen Lorente, OCWA - Regional Hub Manager
Amber Hayter, Kawartha Lakes – Manager, Water & Wastewater
Michelle Flaherty, Kawartha Lakes – Contract Coordinator
Brad Jackson, MECP – Water Supervisor
Brad Jackson, MECP – Water Compliance Officer

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

48 Lagoon Rd
Lindsay, ON K9V 4R3

Tel: 705-738-9734
www.ocwa.com

David Bradley
District Manager
Peterborough District Office
Ministry of the Environment, Conservation and Parks
300 Water Street, 2nd Floor, South Tower
Peterborough, ON
K9J 3C7

January 2, 2025

Dear Mr. Bradley:

Re: Lindsay WWTP 2024 Q4 Bypass Event and Overflow Event Summary Report

Amended Environmental Compliance Approval #1696-BPLL4R sections 4(6) and 5(6) issued June 29, 2020 for the Lindsay WWTP requires a Bypass Event and Overflow Event summary report be submitted to the District Manager on a quarterly basis, no later than February 15, May 15, August 15, and November 15 each calendar year.

Amended Environmental Compliance Approval #1328-AN5PBL section 5(3) issued July 4, 2017 for the Rivera PS requires an Overflow Event summary report be submitted to the Water Supervisor on a quarterly basis, no later than February 14, May 15, August 14, and November 15 each calendar year.

There were no incidents of Bypass or Overflow Events at the Lindsay WWTP or Pumping Station during the fourth quarter of 2024 (October, November, and December).

Please contact me if you have any questions or comments.

Best regards,

Katie Campbell
Process & Compliance Technician
Ontario Clean Water Agency
Kawartha Hub
(705) 934-0026

CC: Brent Martin, OCWA - Operations Manager
Allison McCann, OCWA - SPC Manager
Lynette Nicholson, OCWA – General Manager
Karen Lorente, OCWA - Regional Hub Manager
Amber Hayter, Kawartha Lakes – Manager, Water & Wastewater
Michelle Flaherty, Kawartha Lakes – Contract Coordinator
Brad Jackson, MECP – Water Supervisor
Brad Jackson, MECP – Water Compliance Officer

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Appendix VII:
Performance Assessment Report

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Performance Assessment Report Standard ECA

From 1/1/2024 to 12/31/2024

1313 LINDSAY WASTEWATER TREATMENT FACILITY 110000383

	1 / 2024	2/ 2024	3/ 2024	4/ 2024	5/ 2024	6/ 2024	7/ 2024	8/ 2024	9/ 2024	10/ 2024	11/ 2024	12/ 2024	<--Total-->	<--Avg-->	<--Max-->	<-Criteria->
Flows																
Raw Flow: Total - Raw m³/d	535,938.00	464,612.00	459,493.00	567,527.00	498,815.00	454,218.00	488,865.00	419,423.00	366,015.00	311,471.00	280,548.00	377,137.00	5,224,062.00			0.00
Raw Flow: Avg - Raw m³/d	17,288.32	16,021.10	14,822.35	18,917.57	16,090.81	15,140.60	15,769.84	13,529.77	12,200.50	10,047.45	9,351.60	12,165.71		14,273.39		
Raw Flow: Max - Raw m³/d	20,887.00	20,608.00	22,554.00	26,954.00	23,731.00	23,404.00	20,931.00	18,958.00	16,482.00	12,769.00	11,591.00	19,672.00			26,954.00	0.00
Raw Flow: Count - Raw m³/d	31.00	29.00	31.00	30.00	31.00	30.00	31.00	31.00	30.00	31.00	30.00	31.00	366.00			0.00
Eff. Flow: Total - Eff m³/d	524,332.00	453,335.00	441,153.00	552,091.00	479,640.00	435,391.00	471,834.00	389,104.00	356,050.00	297,510.00	265,840.00	359,606.00	5,025,886.00			0.00
Eff. Flow: Avg - Eff m³/d	16,913.94	15,632.24	14,230.74	18,403.03	15,472.26	14,513.03	15,220.45	12,551.74	11,868.33	9,597.10	8,861.33	11,600.19		13,731.93		
Eff. Flow: Max - Eff m³/d	20,674.00	20,140.00	22,105.00	26,519.00	23,236.00	23,003.00	20,547.00	18,520.00	16,244.00	12,249.00	11,145.00	19,098.00			26,519.00	0.00
Eff Flow: Count - Eff m³/d	31.00	29.00	31.00	30.00	31.00	30.00	31.00	31.00	30.00	31.00	30.00	31.00	366.00			0.00
Biochemical Oxygen Demand: BOD5																
Raw: Avg BOD5 - Raw mg/L	< 62.00	155.00	141.75	120.25	116.60	121.50	141.25	149.60	120.25	128.20	209.00	147.20		< 134.38	< 209.00	0.00
Raw: # of samples of BOD5 - Raw mg/L	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	5.00	53.00			0.00
Total Suspended Solids: TSS																
Raw: Avg TSS - Raw mg/L	97.25	196.80	188.75	206.00	183.20	207.00	224.25	230.00	234.25	223.20	299.75	215.00		208.79	299.75	0.00
Raw: # of samples of TSS - Raw mg/L	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	5.00	53.00			0.00
Total Phosphorus: TP																
Raw: Avg TP - Raw mg/L	1.15	2.06	2.69	2.06	1.95	2.23	2.47	2.30	2.69	2.87	3.62	2.81		2.41	3.62	0.00
Raw: # of samples of TP - Raw mg/L	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	5.00	53.00			0.00
Nitrogen Series																
Raw: Avg TKN - Raw mg/L	15.85	17.84	20.33	17.35	16.76	15.95	17.08	20.04	20.08	23.48	24.60	17.72		18.92	24.60	0.00
Raw: # of samples of TKN - Raw mg/L	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	5.00	53.00			0.00
Eff: Avg NO3-N - Eff mg/L	10.34	9.19	8.98	9.97	8.18	7.56	7.35	7.53	9.55	8.29	8.13	8.64		8.64	10.34	0.00
Eff: # of samples of NO3-N - Eff mg/L	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	5.00	53.00			0.00
Eff: Avg NO2-N - Eff mg/L	< 0.20	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.04	< 0.03		< 0.04	< 0.20	0.00
Eff: # of samples of NO2-N - Eff mg/L	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	5.00	53.00			0.00
Disinfection																
Eff: GMD E. Coli - Eff cfu/100mL	5.15	2.70	2.00	2.63	2.00	2.00	2.00	2.49	2.00	1.74	1.68	2.00				175.00
Eff: # of samples of E. Coli - Eff cfu/100mL	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	5.00	53.00			0.00

APPENDIX P

MECP Landfill Report Submission Form

Appendix D-Monitoring and Screening Checklist
General Information and Instructions

General Information: The checklist is to be completed, and submitted with the Monitoring Report.
Instructions: A complete checklist consists of:
(a) a completed and signed checklist, including any additional pages of information which can be attached as needed to provide further details where indicated.
(b) completed contact information for the Competent Environmental Practitioner (CEP)
(c) self-declaration that CEP(s) meet(s) the qualifications as set out below and in Section 1.2 of the Technical Guidance Document.

Definition of Groundwater CEP:
For groundwater, the CEP must have expertise in hydrogeology and meet one of the following:
(a) the person holds a licence, limited licence or temporary licence under the *Professional Engineers Act*; or
(b) the person holds a certificate of registration under the *Professional Geoscientists Act, 2000* and is a practicing member, temporary, member or limited member of the Association of Professional Geoscientists of Ontario. O. Reg. 66/08, s. 2..
Definition of Surface water CEP:
A CEP for surface water assessments is a scientist, professional engineer or professional geoscientist as described in (a) and (b) above with demonstrated experience and post-secondary education, either a diploma or degree, in hydrology, aquatic ecology, limnology, aquatic biology, physical geography with specialization in surface water, and/or water resource management.

The type of scientific work that a CEP performs must be consistent with that person's education and experience. If an individual has appropriate training and credentials in both groundwater and surface water and is responsible for both areas of expertise, the CEP may then complete and validate both sections of the checklist.

Monitoring Report and Site Information	
Waste Disposal Site Name	Lindsay Ops Landfill Site
Location (e.g. street address, lot, concession)	51 Wlison Road
GPS Location (taken within the property boundary at front gate/ front entry)	680593 / 4917668
Municipality	City of Kawartha Lakes
Client and/or Site Owner	City of Kawartha Lakes
Monitoring Period (Year)	2024
This Monitoring Report is being submitted under the following:	
Certificate of Approval No.:	Landfill - A 321504
Director's Order No.:	Type Here
Provincial Officer's Order No.:	Type Here
Other:	Type Here

Report Submission Frequency	◉ **Annual** ○ **Other**	Specify (Type Here):
The site is:	◉ **Active** ○ **Inactive** ○ **Closed**	
If closed, specify C of A, control or authorizing document closure date:		
Has the nature of the operations at the site changed during this monitoring period?	◉ **Yes** ○ **No**	
If yes, provide details:	See Annual Monitoring Report for details	
Have any measurements been taken since the last reporting period that indicate landfill gas volumes have exceeded the MOE limits for subsurface or adjacent buildings? (i. e. exceeded the LEL for methane)	◉ Yes ○ No	

Groundwater WDS Verification:

Based on all available information about the site and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The monitoring program continues to effectively characterize site conditions and any groundwater discharges from the site. All monitoring wells are confirmed to be in good condition and are secure:	(●) **Yes** ( ) **No**	those that have been compromised have been repaired over last few years
2) All groundwater, leachate and WDS gas sampling and monitoring for the monitoring period being reported on was successfully completed as required by Certificate(s) of Approval or other relevant authorizing/control document(s):	(●) **Yes** ( ) **No** ( ) **Not Applicable**	If no, list exceptions below or attach information.

Groundwater Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**
		Select Date
		Select Date
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date

3) a) Some or all groundwater, leachate and WDS gas sampling and monitoring requirements have been established or defined outside of a ministry C of A, authorizing, or control document.	◉ **Yes** ○ **No** ○ **Not Applicable**	
b) If yes, the sampling and monitoring identified under 3(a) for the monitoring period being reported on was successfully completed in accordance with established protocols, frequencies, locations, and parameters developed as per the Technical Guidance Document:	◉ **Yes** ○ **No** ○ **Not Applicable**	If no, list exceptions below or attach additional information.

Groundwater Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**
	Type Here	Select Date
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date

4) All field work for groundwater investigations was done in accordance with standard operating procedures as established/outlined per the Technical Guidance Document (including internal/external QA/QC requirements) (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	◉ **Yes** ○ **No**	If no, specify (Type Here):

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

5) The site has an adequate buffer, Contaminant Attenuation Zone (CAZ) and/or contingency plan in place. Design and operational measures, including the size and configuration of any CAZ, are adequate to prevent potential human health impacts and impairment of the environment.	(●) **Yes** ( ) **No**	If no, the potential design and operational concerns/ exceptions are as follows (Type Here):	
6) The site meets compliance and assessment criteria.	( ) **Yes** (●) **No**	RUP values are exceeded however, are not interpreted to be sourced to landfill	
7) The site continues to perform as anticipated. There have been no unusual trends/ changes in measured leachate and groundwater levels or concentrations.	(●) **Yes** ( ) **No**	If no, list exceptions and explain reason for increase/change (Type Here):	
1) Is one or more of the following risk reduction practices in place at the site: ***(a)*** **There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/treatment; or** ***(b)*** **There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or** ***(c)*** **The site meets the following two conditions (typically achieved after 15 years or longer of site operation):** ***i.*** **The site has developed stable leachate mound(s) and stable leachate plume geometry/concentrations; and** ***ii.*** **Seasonal and annual water levels and water quality fluctuations are well understood.**	(●) **Yes** ( ) **No**	**Note which practice(s):**	☒ **(a)** ☒ **(b)** ☒ **(c)**
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	( ) **Yes** (●) **No** ( ) **Not Applicable**		

Groundwater CEP Declaration:

I am a licensed professional Engineer or a registered professional geoscientist in Ontario with expertise in hydrogeology, as defined in Appendix D under Instructions. Where additional expertise was needed to evaluate the site monitoring data, I have relied on individuals who I believe to be experts in the relevant discipline, who have co-signed the compliance monitoring report or monitoring program status report, and who have provided evidence to me of their credentials.

I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended), and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories,* or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature and will be rectified for the next monitoring/reporting period. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

27-Apr-2025

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

○ **No changes to the monitoring program are recommended**	
◉ **The following change(s) to the monitoring program is/are recommended:**	the annual monitoring report outlines general concepts relating to monitoring reductions for the Site.
◉ **No Changes to site design and operation are recommended**	
○ **The following change(s) to the site design and operation is/ are recommended:**	Type Here

Name:	Colin Ross, B.Sc., P.Geo.		
Seal:	Add Image 		
Signature:		**Date:**	27-Apr-2025
CEP Contact Information:	Colin Ross		
Company:	Azimuth Environmental Consulting Inc.		
Address:	642 Welham Road, Barrie, ON L4N 9A1		
Telephone No.:	705-721-8451	Fax No. :	705-721-8926
E-mail Address:	colin@azimuthenvironmental.com		
Co-signers for additional expertise provided:			
Signature:		**Date:**	Select Date
Signature:		**Date:**	Select Date

Surface Water WDS Verification:

Provide the name of surface water body/bodies potentially receiving the WDS effluent and the approximate distance to the waterbody (including the nearest surface water body/bodies to the site):

Name (s)	Scugog River
Distance(s)	650 m

Based on all available information and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The current surface water monitoring program continues to effectively characterize the surface water conditions, and includes data that relates upstream/background and downstream receiving water conditions:	(●) Yes ( ) No	
2) All surface water sampling for the monitoring period being reported was successfully completed in accordance with the Certificate(s) of Approval or relevant authorizing/control document(s) (if applicable):	( ) Yes (●) No ( ) **Not applicable (No C of A, authorizing / control document applies)**	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date
all surface water locations	many locations were dry and not sampled in summer and fall monitoring events	Select Date
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date

3) a) Some or all surface water sampling and monitoring program requirements for the monitoring period have been established outside of a ministry C of A or authorizing/control document.	◉ **Yes** ○ **No** ○ **Not Applicable**	
b) If yes, all surface water sampling and monitoring identified under 3 (a) was successfully completed in accordance with the established program from the site, including sampling protocols, frequencies, locations and parameters) as developed per the Technical Guidance Document:	◉ **Yes** ○ **No** ○ **Not Applicable**	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date

4) All field work for surface water investigations was done in accordance with standard operating procedures, including internal/external QA/QC requirements, as established/ outlined as per the Technical Guidance Document, MOE 2010, or as amended. (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	◉ **Yes** ○ **No**	If no, specify (Type Here):

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

5) The receiving water body meets surface water-related compliance criteria and assessment criteria: i.e., there are no exceedances of criteria, based on MOE legislation, regulations, Water Management Policies, Guidelines and Provincial Water Quality Objectives and other assessment criteria (e.g., CWQGs, APVs), as noted in Table A or Table B in the Technical Guidance Document (Section 4.6):	○ **Yes** ◉ **No**

If no, list parameters that exceed criteria outlined above and the amount/percentage of the exceedance as per the table below or provide details in an attachment:

Parameter	Compliance or Assessment Criteria or Background	Amount by which Compliance or Assessment Criteria or Background Exceeded
e.g. Nickel	e.g. C of A limit, PWQO, background	e.g. X% above PWQO
unionized ammonia phophorus aluminum silver zinc	0.02 mg/L 0.03 mg/L 0.075 mg/L 0.0001 mg/L 0.02 mg/L	>100% >100% >100% 100% >100%
copper phenols	0.006 mg/L 0.001 mg/L	22% >100%
Type Here	Type Here	Type Here
Type Here	Type Here	Type Here
6) In my opinion, any exceedances listed in Question 5 are the result of non-WDS related influences (such as background, road salting, sampling site conditions)?	◉ **Yes** ○ **No**	Concentrations are more likely related to sewage effluent

7) All monitoring program surface water parameter concentrations fall within a stable or decreasing trend. The site is not characterized by historical ranges of concentrations above assessment and compliance criteria.	◉ **Yes** ○ **No**	Some variability exists over time with respect to parameter concentrations however, there are no upward trends .
8) For the monitoring program parameters, does the water quality in the groundwater zones adjacent to surface water receivers exceed assessment or compliance criteria (e.g. , PWQOs, CWQGs, or toxicity values for aquatic biota (APVs)):	◉ Yes ○ No ○ Not Known ○ Not Applicable	
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	○ **Yes** ◉ **No** ○ **Not Applicable**	If yes, list value(s) that are/have been exceeded and follow-up action taken (Type Here)

Surface Water CEP Declaration:

I, the undersigned hereby declare that I am a Competent Environmental Practitioner as defined in Appendix D under Instructions, holding the necessary level of experience and education to design surface water monitoring and sampling programs, conduct appropriate surface water investigations and interpret the related data as it pertains to the site for this monitoring period.

I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended) and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories,* or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature or will be rectified for future monitoring events. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

27-Apr-2025

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

○ **No Changes to the monitoring program are recommended**	
◉ **The following change(s) to the monitoring program is/are recommended:**	general reductions to the surface water monitoring program are outlined in the annual monitoring report
◉ **No changes to the site design and operation are recommended**	
○ **The following change(s) to the site design and operation is/are recommended:**	Type Here

CEP Signature	
Relevant Discipline	Hydrogeology
Date:	27-Apr-2025
CEP Contact Information:	Colin Ross
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